

Table of Contents

Volume I:

Introduction	1
Journey To Moscow (July 16-18)	2

Moscow	2
Ministry of Agriculture	2
Agricultural Exhibition	2
The Kremlin	2
Lenin Academy	2
Bokuchayev Institute	2
Timiryazev Academy	2
Pedology Department, University of Moscow	2
Institute of Fertilizers	2

SOVIET JOURNAL

Minsk	3
-----------------	---

(Volume II)

Ministry of Agriculture	3
Amelioration Institute (3 to 21 August)	3
Experimental Farm	3
Drainage Machines	3
Gomintern Collective Farm	3
Machine-testing Station	3
New Life Collective Farm	3

Kiev	4
October Collective Farm	4
Agricultural Fair	4
Ministry of Agriculture	4

Kiev to Poltava by car	10
Stalin Collective Farm	10
Poltavskaya Oblast	11
Poltava Experimental Farm	11

Poltava to Dnepropetrovsk	11
-------------------------------------	----

Charles E. Kellogg

Dnepropetrovsk	12
Orshonikidze Collective Farm	12
Dneprovski State Farm	13
Research Institute on corn	13

Rostov	14
Institute on Water Economy	14
Kolug State Farm	14
Red Orchard State Farm	15
Lenin Collective Farm	15

Krasnodar	16
Department of Water Economy	16
Kuban Rice Station	16

Table of conversions of units of measure	17
--	----

Volume II:

Kuban Rice Field Station	17
------------------------------------	----

1958

SOVIET JOURNAL

(Volume II)

(3 to 21 August)

Charles E. Kellogg

1958

Table of Contents

Volume I:	182
Introduction	1
Journey To Moscow (July 16-18)	3
Moscow	6
Ministry of Agriculture	11
Agricultural Exhibition	14
The Kremlin	17
Lenin Academy	20
Dokuchaiev Institute	25
Timiryazev Academy	31
Pedology Department, University of Moscow	37
Institute of Fertilizers	42
Minsk	51
Ministry of Agriculture	52
Amelioration Institute	56
Experimental Farm	62
Drainage Machines	69
Comintern Collective Farm	73
Machine-testing Station	76
New Life Collective Farm	79
Kiev	84
October Collective Farm	87
Agricultural Fair	95
Ministry of Agriculture	98
Kiev to Poltava by car	101
Stalin Collective Farm	106
Poltavskaya Oblast	110
Poltava Experimental Farm	111
Poltava to Dnepropetrovsk	116
Dnepropetrovsk	122
Orzhonikidze Collective Farm	125
Dneprovski State Farm	130
Research Institute on corn	133
Rostov	140
Institute on Water Economy	142
Koisug State Farm	147
Red Orchard State Farm	152
Lenin Collective Farm	153
Krasnodar	161
Department of Water Economy	162
Kuban Rice Station	167
Table of conversions of units of measure	173a
Volume II:	
Kuban Rice Field Station	174

Table of Contents

174	Volume II:
173	Kuban Rice Field Station
167	Table of conversions of units of measure
167	Kuban Rice Station
162	Department of Water Economy
161	Krasnodar
153	Lenin Collective Farm
152	Red Orchard State Farm
147	Kolug State Farm
142	Institute on Water Economy
140	Rostov
133	Research Institute on corn
130	Dneprovski State Farm
125	Orshonikhids Collective Farm
122	Dnepropetrovsk
116	Poltava to Dnepropetrovsk
111	Poltava Experimental Farm
110	Poltavskaya Oblast
106	Stalin Collective Farm
101	Kiev to Poltava by car
98	Ministry of Agriculture
92	Agricultural Fair
87	October Collective Farm
84	Kiev
79	New Life Collective Farm
76	Machine-testing Station
73	Communist Collective Farm
69	Drainage Machines
62	Experimental Farm
56	Amelioration Institute
52	Ministry of Agriculture
51	Minsk
42	Institute of Fertilizers
37	Pathology Department, University of Moscow
31	Timiryazev Academy
25	Dokuchaev Institute
20	Lenin Academy
17	The Kremlin
14	Agricultural Exhibition
11	Ministry of Agriculture
6	Moscow
3	Journey to Moscow (July 16-18)
1	Introduction
	Volume I:

II

Krasnoarmeisk State Farm	182
Michurin Collective Farm	184
Stalingrad	192
Agricultural Educational Institute	195
Institute of Agro-Forest Amelioration	198
Fortieth Anniversary of October Collective Farm	202
Stalingrad-Moscow-Tashkent	209
Uzbek Ministry of Agriculture	214
Institute for Water Economy	219
Hungry Steppe	224
Akhun Babaev Collective Farm	225
Institute on machinery	231
Akkavak Station	235
Plant Breeding Institute	243
Andizahn	246
Savay State Farm	255
Sverdlov Collective Farm	265
Tashkent	272
Akmolinsk	280
Dawning Collective Farm	282
Unification Collective Farm	285
Eighteenth Anniversary of the Kazakhstan Republic	
Collective Farm	286
Kazakh Research Institute	289
Shortandinski State Farm	299
Return to Akmolinsk	304
Akmolinsk-Moscow	307
Moscow	309
Moscow-New York	318
Table of conversions of units of measure	325
Carbon-nitrogen ratios on 5 soil samples	326
Some Soviet Press Reports on Mission	

183	.....	Krasnoarmeisk State Farm
184	.....	Michurin Collective Farm
192	.....	Sealingrad
192	.....	Agricultural Educational Institute
198	.....	Institute of Agro-Forest Amelioration
202	.....	Forstlich Anniversary of October Collective Farm
209	.....	Sealingrad-Moscow-Tashkent
214	.....	Uzbek Ministry of Agriculture
219	.....	Institute for Water Economy
224	.....	Hungry Steppes
225	.....	Akhun Babayev Collective Farm
231	.....	Institute on machinery
232	.....	Akkasak Station
243	.....	Plant Breeding Institute
246	.....	Andisahn
252	.....	Savay State Farm
262	.....	Sverdlov Collective Farm
272	.....	Tashkent
280	.....	Akmolinsk
282	.....	Dawning Collective Farm
282	.....	Unitization Collective Farm
282	.....	Eighteenth Anniversary of the Kazakhstan Republic
286	.....	Collective Farm
289	.....	Kazakh Research Institute
299	.....	Shortlandinski State Farm
304	.....	Return to Akmolinsk
307	.....	Akmolinsk-Moscow
309	.....	Moscow
318	.....	Moscow-New York
322	.....	Table of conversions of units of measure
326	.....	Carbon-nitrogen ratios on 5 soil samples
		Some Soviet Press Reports on Mission

August 3

I am up at 6:30 and take a walk. In the towns, and especially on the farms, except for the obvious students, one meets few young men in their 20's, but lots of young women. I suppose the young men are in the army. (I understand that training maneuvers are now underway.)

Every town seems to have one or several parks with nice flower gardens. On the whole, the kinds of flowers are about the same as ours in Washington. I see roses, salvia, morning-glory, sweet william, pansies, asters, argeratum, cannas, geraniums, coxcomb, dahlia, begonia, petunia, portulaca, lilacs, English box, privet, and hardy palms.

Now at 7 o'clock there are many mothers sitting in the park with their babies. As I walk along the streets I see lots of candy stores even though candy is very expensive. I see an unusually high proportion of toys in the shop windows. Here too there are lines waiting at the food shops. I see no goods in the windows of United States manufacture, but lots of copies made in the Soviet Union, even electric razors. Most of the costume jewelry and objects d'art are quite poor.

After breakfast we leave at 8:50 for the lower Kuban. This promises to be a sunny, warm day. Along the road is a beautifully formed windbreak. The center is poplar and the outside rows are low acacia. We pass a field of excellent corn. Here I see a millet that looks like broomcorn. Some of the orchards are only fair. We pass a village with rather small houses. Some of the roofs are thatched

August 3

I am up at 6:30 and take a walk. In the towns, and especially on the farms, except for the obvious students, one meets few young men in their 20's, but lots of young women. I suppose the young men are in the army. (I understand that training maneuvers are now underway.)

Every town seems to have one or several parks with nice flower gardens. On the whole, the kinds of flowers are about the same as ours in Washington. I see roses, salvia, morning-glory, sweet william, pansies, asters, argeratum, cannas, geraniums, concomb, dahlias, begonias, petunias, portulaca, lilacs, English box, privet, and hardy palms.

Now at 7 o'clock there are many mothers sitting in the park with their babies. As I walk along the streets I see lots of candy stores even though candy is very expensive. I see an unusually high proportion of toys in the shop windows. Here too there are lines waiting at the food shops. I see no goods in the windows of United States manufacture, but lots of copies made in the Soviet Union, even electric razors. Most of the costume jewelry and objects d'art are quite poor.

After breakfast we leave at 8:50 for the lower Kuban. This promises to be a sunny, warm day. Along the road is a beautifully formed windbreak. The center is poplar and the outside rows are low acacia. We pass a field of excellent corn. Here I see a millet that looks like broomcorn. Some of the orchards are only fair. We pass a village with rather small houses. Some of the roofs are thatched

and some are metal, but most of them are tile. Near the houses are many small stacks of peat (or manure?) bricks for fuel. Then other bricks appear to have also clay and straw. These are used for making the walls of houses. The home plots seem to have some of this broomcorn along with corn, sunflowers, fruit trees, and vegetables.

We go along a new tar-bound gravel road that is only fair despite the nearly level grade and the good subgrade.

Along here all the wheat has been harvested. We are driving on a well drained terrace and the soils are probably ordinary Chernozem. Crops look quite good: Wheat, meadow, sunflowers, corn, late corn for silage, wheat, vines (well sprayed), fallow, late corn for silage, broomcorn (or millet), sunflowers, meadow-pasture after cereal, and a little unused land.

We pass another village where there are a few new houses that are quite a cut above those built immediately after the German War. We turn off on an earth road, which is not too bad now that it is dry. We pass large tobacco-drying sheds near fields of tobacco and sunflowers. We pass a large area of young soil from clayey alluvium that has been recently plowed. There is a good deal of land here just plowed after cereal harvest. I see two herds of Red Steppe cattle in only fair flesh. Then there is more wasteland and sunflowers. I pass a young shelterbelt here, mainly of maples, suffering from too much competition with grass, and then an older woods that is mainly oak.

and some are metal, but most of them are tile. Near the houses are many small stacks of peat (or manure?) bricks for fuel. Then other bricks appear to have also clay and straw. These are used for making the walls of houses. The home plots seem to have some of this broomcorn along with corn, sunflowers, fruit trees, and vegetables.

We go along a new ear-bound gravel road that is only fair despite the nearly level grade and the good subgrade.

Along here all the wheat has been harvested. We are driving on a well drained terrace and the soils are probably ordinary Chernozem. Crops look quite good: Wheat, meadow, sunflowers, corn, late corn for silage, wheat, vines (well sprayed), fallow, late corn for silage, broomcorn (or millet), sunflowers, meadow-pasture after cereal, and a little unused land.

We pass another village where there are a few new houses that are quite a cut above those built immediately after the German War. We turn off on an earth road, which is not too bad now that it is dry. We pass large tobacco-drying sheds near fields of tobacco and sunflowers. We pass a large area of young soil from clayey alluvium that has been recently plowed. There is a good deal of land here just plowed after cereal harvest. I see two herds of Red Steppe cattle in only fair flesh. Then there is more wasteland and sunflowers. I pass a young shelterbelt here, mainly of maples, suffering from too much competition with grass, and then an older woods that is mainly oak.

These earth roads are terribly dusty.

We pass sunflowers, this broomcorn or millet, corn, wheat stubble, and corn.

We cross over the main irrigation canal serving 12 collective farms and one state farm and stop at the "head lock." I am told that the first length of the canal from the river catches about 18 or 20 percent of the silt from the water out of 100,000 to 120,000 tons brought by the canal. (K-2559) This settling basin which forms the first part of the canal is cleaned each spring. Although the canal brings water to 12,000 hectares, it has a capacity for 21,000. All of the water is ultimately for paddy rice. They now use 21 cubic meters per second, but could use 51 cubic meters per second. The silt basin is 1,150 meters long between the river and the head gate.

Beyond this main area of irrigation they have two other irrigated rice areas supplied by drainage (or tail) water from this main area. They say the water is sweet and can be used for other crops. The water has less than one gram of salt per liter. It consists mainly of sodium chloride, potassium chloride, and calcium sulphate.

Here again one sees the heavy new machines and then much hauling in little wagons pulled by one or two small horses. (K-2560)

We drive along a branch canal bordered by rice fields. They have many narrow windbreaks, mainly of poplar. Contrary to what I had heard, the people here say that early spring winds make waves in the unprotected rice paddies that disturb the seeds before they are rooted. (K-2561)

These earth roads are terribly dusty.

We pass sunflowers, this broomcorn or millet, corn, wheat

stubble, and corn.

We cross over the main irrigation canal serving 12 collective

farms and one state farm and stop at the "head lock." I am told

that the first length of the canal from the river catches about

18 or 20 percent of the silt from the water out of 100,000 to

120,000 tons brought by the canal. (K-2559) This settling basin

which forms the first part of the canal is cleaned each spring.

Although the canal brings water to 12,000 hectares, it has a capacity

for 21,000. All of the water is ultimately for paddy rice. They

now use 21 cubic meters per second, but could use 21 cubic meters

per second. The silt basin is 1,150 meters long between the river

and the head gate.

Beyond this main area of irrigation they have two other irrigated

rice areas supplied by drainage (or tail) water from this main area.

They say the water is sweet and can be used for other crops. The

water has less than one gram of salt per liter. It consists mainly

of sodium chloride, potassium chloride, and calcium sulphate.

Here again one sees the heavy new machines and then much hauling

in little wagons pulled by one or two small horses. (K-2560)

We drive along a branch canal bordered by rice fields. They

have many narrow windbreaks, mainly of poplar. Contrary to what I

had heard, the people here say that early spring winds make waves

in the unprotected rice paddies that disturb the seeds before they

are rooted. (K-2561)



K-2559. August 3, 1958. West of Krasnodar. Settling basin in a main irrigation canal from the Kuban River.



K-2560. August 3, 1958. West of Krasnodar. Hauling hay.

K-2559. August 3, 1958. West of Krasnodar. Settling
basin in a main irrigation canal from the
Kuban River.

K-2560. August 3, 1958. West of Krasnodar. Hauling
bay.



K-2561. August 3, 1958. West of Krasnodar. Village near irrigation canal.



K-2562. August 3, 1958. West of Krasnodar. Rice Experimental Station: Second rice crop after alfalfa (Variety: Krasnormayski No. 313).

K-2561. August 3, 1958. West of Krasnodar. Village near
irrigation canal.

K-2562. August 3, 1958. West of Krasnodar. Rice
Experimental Station: Second rice crop
after alfalfa (Variety: Krasnodarski No. 313).

We go to the rice experimental field station that is handled by the Kuban Rice Station that we visited yesterday. This area is said to have been marshland before 1937. During the war there was a big battle here and all but three buildings were destroyed. Near the headquarters in a walnut grove there is a little blue monument to forty-three Soviet soldiers who died here.

They tell me that they have 135 hectares of irrigated rice paddy laid out to have an irrigation ditch on one side and a drainage ditch on the other. (Yesterday I understood 60 hectares.)

I look very hurriedly at a Meadow-Chernozem used for rice that is now resting under alfalfa. The water came up in the pit to 15 inches of the surface. Actually the subsoil serves as a "lid" on the ground water which is under some pressure just now.

The surface soil is black clay with some fine mottling with reddish-brown in the upper inch or so. The soil is granular. This surface A horizon is about 12 to 15 inches thick. The pH is about 6.5 to 6.8.

The B horizon runs to about 35 inches. It is very dark gray (10YR 3/1) heavy clay, mottled with strong brown (7.5YR 5/6). The soil is cracked into large irregular blocks with some excess of vertical breakage, yet it is well permeated with roots. The B is very near to being a claypan, yet is not completely impermeable.

We go to the rice experimental field station that is handled by the Kuban Rice Station that we visited yesterday. This area is said to have been marshland before 1937. During the war there was a big battle here and all but three buildings were destroyed. Near the headquarters in a walnut grove there is a little blue monument to forty-three Soviet soldiers who died here. They tell me that they have 135 hectares of irrigated rice paddy laid out to have an irrigation ditch on one side and a drainage ditch on the other. (Yesterday I understood 60 hectares.) I look very hurriedly at a Meadow-Chernozem used for rice that is now resting under alfalfa. The water came up in the pit to 15 inches of the surface. Actually the subsoil serves as a "lid" on the ground water which is under some pressure just now. The surface soil is black clay with some fine mottling with reddish-brown in the upper inch or so. The soil is granular. This surface A horizon is about 12 to 15 inches thick. The pH is about 6.5 to 6.8. The B horizon runs to about 35 inches. It is very dark gray (10YR 3/1) heavy clay, mottled with strong brown (7.5YR 5/6). The soil is cracked into large irregular blocks with some excess of vertical breakage, yet it is well permeated with roots. The B is very near to being a claypan, yet is not completely impermeable.

At about 40 to 50 inches the soil is said to have calcium carbonate concretions and to be quite compact. I see the material from this C horizon. The concretions are small and the soil is gray, mottled with yellow and brown.

This is an excellent soil for paddy. I am told that the soil is more gleyed and more compact than formerly, although it was deeply gleyed before development into arable soil. Before irrigation the water table stood at 2 to 3 meters in the dry season; now it stands at 100 to 120 centimeters.

I take a kodachrome of the pit here. (K-2650) I ask for a man to stand in it and Eddie Baranov, my young and very good interpreter, volunteers. Then he takes out a notebook and starts to scribble as I do. "Now," he says, "I am a soil scientist!"

They have mowed the alfalfa here once and will mow it twice more. The first year they get 4 tons per hectare and this year they expect between 8 and 12 tons. They do not need to irrigate because of the irrigation of the adjacent rice paddies. The water table fluctuates from 80 to 90 centimeters from the surface after flooding rice. When the water is withdrawn from the rice fields the water table drops to around 100 to 120 centimeters. Because of this near-claypan in the soil, the water is held down, away from the surface soil. Most of the alfalfa roots are in this plowed surface. But if holes are dug through the claypan the field becomes waterlogged.

K-2650. August 3, 1958. West of Krasnodar. Rice
experimental farm. "Meadow Chernozem" under
alfalfa. (Eddie).

K-2651. August 3, 1958. West of Krasnodar. Rice
experimental farm. Rice fertilized at tillering
stage.

I get some nice pictures of rice that has been fertilized at the tillering stage with a mixture applied to the surface containing 150 kilograms per hectare of each superphosphate and sulphate of ammonia. (K-2651) At this time the water level is reduced to 5 centimeters and then later returned to about 10 to 12 centimeters. I notice some dark green spots from heavy applications of nitrogen fertilizer. My hosts expect a little over 4 tons per hectare and Dr. Cline estimates a little over 80 bushels per acre.

We look at several fields treated in different ways. The last one is a first-year crop after alfalfa and not fertilized. The alfalfa sod is plowed late in October and then harrowed with tractors. If plowed earlier nitrogen is lost. In this system there are few weeds so they need only a shallow plowing in early May. Then the dry soil is smoothed by disking and rolling. One hundred and eighty kilograms of seed are sown per hectare with disk seed drills under good control for depth. This high rate of seeding they find increases yields and helps reduce weeds.

We look at another field of rice the second year after alfalfa. (K-2562) This was plowed to 20 or 25 centimeters in late autumn, not touched in the winter, and harrowed in the spring. In April it was plowed without moldboards for aeration and to cut the roots of weeds, leveled, given a shallow plowing, disked, and rolled. The field was seeded like the previous one and given 150 kilograms of superphosphate and a little ammonium sulphate. This was broadcast

I get some nice pictures of rice that has been fertilized at the tillering stage with a mixture applied to the surface containing 150 kilograms per hectare of each superphosphate and sulphate of ammonia. (K-2551) At this time the water level is reduced to 5 centimeters and then later returned to about 10 to 12 centimeters. I notice some dark green spots from heavy applications of nitrogen fertilizer. My hosts expect a little over 4 tons per hectare and Dr. Cline estimates a little over 80 bushels per acre.

We look at several fields treated in different ways. The last one is a first-year crop after alfalfa and not fertilized. The alfalfa seed is plowed late in October and then harrowed with tractors. If plowed earlier nitrogen is lost. In this system there are few weeds so they need only a shallow plowing in early May. Then the dry soil is smoothed by disking and rolling. One hundred and eighty kilograms of seed are sown per hectare with disk seed drills under good control for depth. This high rate of seeding they find increases yields and helps reduce weeds.

We look at another field of rice the second year after alfalfa. (K-2552) This was plowed to 20 or 25 centimeters in late autumn, not touched in the winter, and harrowed in the spring. In April it was plowed without moldboards for aeration and to cut the roots of weeds, leveled, given a shallow plowing, disked, and rolled. The field was seeded like the previous one and given 150 kilograms of superphosphate and a little ammonium sulphate. This was broadcast

before the last shallow plowing and the crop fertilized again at the tillering stage. To me, it seems wasteful to use superphosphate on rice at the tillering stage. This field is somewhat more weedy than the other one. They expect 5 tons per hectare of which one ton will be due to the fertilizer.

After alfalfa they expect 5 tons the first year, 4 tons the second year, and 3 tons the third year without fertilizer. They can omit the nitrogen at planting time the first year after alfalfa, but need to use about 150 kilograms of ammonium sulphate per hectare at the tillering stage, and at both planting time and the tillering stage in subsequent years.

They do not recommend growing rice in a plot for more than three years and it is better to have only two years. This is partly a matter of fertilizer costs and partly a matter of weeds.

I photograph this second-year crop after alfalfa. It may lodge during ripening. The variety is Krasnormaysk No. 313, developed here from Japanese parents.

Next I see fallow being flooded to control weeds. The flooding promotes them and after the water is removed they aerate the soil. They are trying to work out ways to plow and to cultivate with tractors when the soil is flooded. I am shown a small bulb of their worst weed that resembles nutgrass. When cultivated with the water on the field by heavy spike harrows, the bulbs come to the surface of the water and are collected by hand or plowed down. They have been able to get some control with herbicides but not so much as they should like.

before the last shallow plowing and the crop fertilized again at the tillering stage. To me, it seems wasteful to use superphosphate on rice at the tillering stage. This field is somewhat more weedy than the other one. They expect 5 tons per hectare of which one ton will be due to the fertilizer.

After alfalfa they expect 5 tons the first year, 4 tons the second year, and 3 tons the third year without fertilizer. They can omit the nitrogen at planting time the first year after alfalfa, but need to use about 150 kilograms of ammonium sulphate per hectare at the tillering stage, and at both planting time and the tillering stage in subsequent years.

They do not recommend growing rice in a plot for more than three years and it is better to have only two years. This is partly a matter of fertilizer costs and partly a matter of weeds.

I photograph this second-year crop after alfalfa. It may lodge during ripening. The variety is Krasnornayak No. 313, developed here from Japanese parents.

Next I see fallow being flooded to control weeds. The flooding promotes them and after the water is removed they aerate the soil. They are trying to work out ways to plow and to cultivate with tractors when the soil is flooded. I am shown a small bulb of their worst weed that resembles nutgrass. When cultivated with the water on the field by heavy spike harrows, the bulbs come to the surface of the water and are collected by hand or plowed down. They have been able to get some control with herbicides but not so much as they should like.

I am shown a nice setup for measuring water use by transpiration, evaporation, and seepage. This is done by combinations of open pots and closed pots with devices for maintaining water levels. They also have test wells for measuring the water tables from 30 to 100 meters below the surface. These indicate the relative impermeability of the B horizon. When they go deeper than one meter water comes to the surface. I am told that they use hand dusters of DDT every 10 days to control mosquitoes around the home. The government dusts the fields by planes once or twice each year.

We see the rice variety plots. Some of them ripen in 90 to 100 days and they expect 5 to 6 tons per hectare during this short period. Dubovski 129 is the main variety for the lower Kuban, although they have earlier ones. They claim 6 to 6.5 tons per hectare. The next one I see is Bros 213. It requires 8 to 9 days more but has given 8 tons per hectare in trials. A still later one, Krasnodar 424, has given as much as 12 tons per hectare but it requires very careful management. I am told that here they have autumn rains so that the crop must be gotten off early, especially where machines are used. Eleven other varieties are under their last field test before final test for approval by a special commission of the government. Another 25 varieties are in small plots and around 1,500 to 2,000 are under selection.

In the laboratory on the station they tell me now that they have a total of 320 hectares, of which 175 are irrigated. (This station seems to grow with the telling!) Besides rice, they have orchards and vines and 7 hectares of shelterbelts. There are cattle,

I am shown a nice setup for measuring water use by transpiration, evaporation, and seepage. This is done by combinations of open pots and closed pots with devices for maintaining water levels. They also have test wells for measuring the water tables from 30 to 100 meters below the surface. These indicate the relative impermeability of the horizon. When they go deeper than one meter water comes to the surface. I am told that they use hand dusters of DDT every 10 days to control mosquitoes around the home. The government dusters the fields by planes once or twice each year.

We see the rice variety plots. Some of them ripen in 90 to 100 days and they expect 5 to 6 tons per hectare during this short period. Dubovskii 129 is the main variety for the lower Kuban, although they have earlier ones. They claim 6 to 6.5 tons per hectare. The next one I see is Bros 213. It requires 8 to 9 days more but has given 8 tons per hectare in trials. A still later one, Krasnodar 424, has given as much as 12 tons per hectare but it requires very careful management. I am told that here they have autumn rains so that the crop must be gotten off early, especially where machines are used. Eleven other varieties are under their last field test before final test for approval by a special commission of the government. Another 25 varieties are in small plots and around 1,500 to 2,000 are under selection.

In the laboratory on the station they tell me now that they have a total of 320 hectares, of which 175 are irrigated. (This station seems to grow with the telling!) Besides rice, they have orchards and vines and 7 hectares of shelterbelts. There are cattle,

hogs, and poultry for use by the people who work here. I am told that they use the income from the crops and livestock for buildings as well as that from the rice seed that they sell. This amounts to about 100 tons of pure seed. But in the years of early rainy autumns and cool summers, the seed harvest is low.

Seed is sold to the government which furnishes it to farms as a subsidy. But later the farms must pay it back. The collective farms can renew their seed every 4 years. Some of them get relatively small amounts and make their own increases for general use.

I am told that they get all the funds for this station from their own income and no government appropriations, except for the salaries of the scientists. I object to this method and point out strongly its dangers. I explain that I have seen too many times where stations financed in this way get a director who puts so much emphasis on income that he forgets the main purpose of the research station. Mr. Melnikov from the Ministry in Moscow says that this is an unusual arrangement and that he agrees with me fully.

Between 1:30 and 3:10 we have lunch, which is about par for the course, and then go to the Krasnoarmeisk Rice-Growing State Farm. The assistant manager of the farm greets us. He says that the farm was organized on the flat plains of the River Kuban in 1931. Some 1,100 hectares were reclaimed; and then in 1946, about 6,000 more were reclaimed. Now they have 13,000 hectares of which 10,300 are arable. He says they have 4,200 hectares of rice, 900 of corn, and 3,500 in fodder crops. They also have some orchards, especially cherries, and

hogs, and poultry for use by the people who work here. I am told that they use the income from the crops and livestock for buildings as well as that from the rice seed that they sell. This amounts to about 100 tons of pure seed. But in the years of early rainy autumns and cool summers, the seed harvest is low.

Seed is sold to the government which furnishes it to farms as a subsidy. But later the farms must pay it back. The collective farms can renew their seed every 4 years. Some of them get relatively small amounts and make their own increases for general use.

I am told that they get all the funds for this station from their own income and no government appropriations, except for the salaries of the scientists. I object to this method and point out strongly its dangers. I explain that I have seen too many times where stations financed in this way get a director who puts so much emphasis on income that he forgets the main purpose of the research station. Mr. Melnikov from the Ministry in Moscow says that this is an unusual arrangement and that he agrees with me fully.

Between 1:30 and 3:10 we have lunch, which is about par for the course, and then go to the Krasnoarmetsk Rice-Growing State Farm. The assistant manager of the farm greets us. He says that the farm was organized on the flat plains of the River Kuban in 1931. Some 1,100 hectares were reclaimed; and then in 1946, about 6,000 more were reclaimed. Now they have 13,000 hectares of which 10,300 are arable. He says they have 4,200 hectares of rice, 900 of corn, and 3,500 in fodder crops. They also have some orchards, especially cherries, and

meadows. Besides the crops they have 2,000 cattle of which 600 are milk cows, poultry, pigs, and bees.

Their total annual harvest of rice is 11,000 tons at an average of about 3 tons per hectare. Their aim is to produce 100 kilograms of rice per 10 man-hours.

They have 1,200 permanent workers plus 300 temporary workers during rice harvest. These are organized into brigades so that each brigade has about 600 hectares and each laborer has 30 hectares for irrigation. Each rice brigade has 20 laborers; but another brigade does the work with tractors and the combine harvesters. On the farm there are 110 tractors that work in 8-hour shifts, and 62 combine harvesters.

The 600 cows average 2,800 kilograms of milk. He says that they make more money from the milk, for the same amount of labor, than from the rice. They get 85 rubles for 100 kilograms of rice and 100 rubles for 100 kilograms of milk.

They also hope to increase their rice yields by better varieties, better fertilizers, and better methods of applying fertilizers. He says they apply 200 kilograms of ammonium sulphate with 18 to 20 percent nitrogen; 200 kilograms superphosphate with 25 percent P_2O_5 ; and 100 kilograms per hectare of potassium chloride, with 40 percent K_2O . This is applied before sowing, and then they add 100 pounds each of ammonium sulphate and superphosphate by plane at tillering time. (This superphosphate is certainly not needed.)

(Our host on the farm gets a bit confused in describing this practice and he has quite a little coaching from the experimental

meadows. Besides the crops they have 2,000 cattle of which 600 are milk cows, poultry, pigs, and bees.

Their total annual harvest of rice is 11,000 tons at an average of about 3 tons per hectare. Their aim is to produce 100 kilograms of rice per 10 man-hours.

They have 1,200 permanent workers plus 300 temporary workers during rice harvest. These are organized into brigades so that each brigade has about 600 hectares and each laborer has 30 hectares for irrigation. Each rice brigade has 20 laborers; but another brigade does the work with tractors and the combine harvesters. On the farm there are 110 tractors that work in 8-hour shifts, and 62 combine harvesters.

The 600 cows average 2,800 kilograms of milk. He says that they make more money from the milk, for the same amount of labor, than from the rice. They get 85 rubles for 100 kilograms of rice and 100 rubles for 100 kilograms of milk.

They also hope to increase their rice yields by better varieties, better fertilizers, and better methods of applying fertilizers. He says they apply 200 kilograms of ammonium sulphate with 18 to 20 percent nitrogen; 200 kilograms superphosphate with 25 percent P_2O_5 ; and 100 kilograms per hectare of potassium chloride, with 40 percent K_2O . This is applied before sowing, and then they add 100 pounds each of ammonium sulphate and superphosphate by plane at tillering time. (This superphosphate is certainly not needed.)

(Our host on the farm gets a bit confused in describing this practice and he has quite a little coaching from the experimental

station people. I am not at all sure that this is the actual practice on this farm.)

We do see some nice rice in the field of the Krasnodar 424 variety. They expect about 4 tons to the hectare. Still the assistant manager feels that their yields are too low.

We are then taken to the Michurin Collective Farm. They have much fruit. To get there we drive on a very rough road on the flood-protected plain of the Kuban River. Along the way I see hemp, corn for fodder, and poor pasture. This heavy soil is said to be flooded in years of high rainfall.

We arrive at 5 p.m. and are addressed by the chairman, Mr. I. V. Markovski. This farm was organized in 1950 by uniting four smaller ones. The basic farm of the 4 was organized in 1940. They now have 14,847 hectares of which about 10,000 are arable. This farm has 13 villages that include 2,300 families and a total population of 7,800 of which 3,600 are workers.

(Obviously many of the young men are away in the army or somewhere. I ask the chairman how many men were away in institutes, in the army, and etc. He replied that he had no way of knowing!)

We are given the following figures for crop areas, in hectares:

Rice	(1957) 1,308
------	--------------

Orchards and vineyards	500
------------------------	-----

Winter wheat	3,427
--------------	-------

Winter barley	300
---------------	-----

Spring barley	258
---------------	-----

Oats	805
------	-----

station people. I am not at all sure that this is the actual

practice on this farm.)

We do see some nice rice in the field of the Krasnodar 424

variety. They expect about 4 tons to the hectare. Still the

assistant manager feels that their yields are too low.

We are then taken to the Michurin Collective Farm. They have

much fruit. To get there we drive on a very rough road on the

flood-protected plain of the Kuban River. Along the way I see

hemp, corn for fodder, and poor pasture. This heavy soil is said

to be flooded in years of high rainfall.

We arrive at 5 p.m. and are addressed by the chairman,

Mr. I. V. Markovskii. This farm was organized in 1950 by uniting

four smaller ones. The basic farm of the 4 was organized in 1940.

They now have 14,847 hectares of which about 10,000 are arable.

This farm has 13 villages that include 2,300 families and a total

population of 7,800 of which 3,600 are workers.

(Obviously many of the young men are away in the army or some-

where. I ask the chairman how many men were away in institutes,

in the army, and etc. He replied that he had no way of knowing.)

We are given the following figures for crop areas, in hectares:

Rice 1,308

Orchards and vineyards 500

Winter wheat 3,427

Winter barley 300

Spring barley 228

Oats 802

As of 1957, they had the following:

Corn for grain	800
Corn for silage	3,012 1,100
Sunflowers	765 375
Hemp	5,500 121
Roots (mangel-wurzels)	1,468 125
Grasses	68,000, 3,128, including
Alfalfa	796
Sudan grass	200 694

The Spring and winter barley in 1957 was 1,967 kilograms per cow. This year they are doing better and from January 1 to August 1

He gives me the following figures on yields in tons per hectare: they had 1,400 kilograms per cow. Milk is delivered to the govern-

Winter wheat	(1958)	3.27
Winter wheat	(1957)	2.52
Winter barley	(1958)	2.60
Winter barley	(1957)	2.94
Spring barley	(1958)	1.80

Spring barley (1957) 2.30

(Added later: Mr. Bulik understood 1.40 was per hectare, not per cow)

Oats (1957) 2.40

but this seems too high to me.)

Corn for grain (1957) 2.60

Of course the farm has a good crop of grain, but it is not counted

Corn for grain (1955) 6.00

Grapes (1957) 7.00

not counting calves and heifers. The milk is delivered 70 percent

He says that not much of the fruit is yet in production. They of its farm milk production to the government. I am told that the planted 165 hectares of grapes in 1957 and 182 in 1958.

calves are weaned immediately and that the milk fed to them is counted

in the total production.

800	Corn for grain
1,100	Corn for silage
375	Sunflowers
121	Hemp
125	Roots (mangel-wurzels)
3,128, including	Grasses
796	Alfalfa
694	Sudan grass
696	Spring and winter barley for pasture

He gives me the following figures on yields in tons per hectare:

3.27	(1958)	Winter wheat
2.52	(1957)	Winter wheat
2.60	(1958)	Winter barley
2.94	(1957)	Winter barley
1.80	(1958)	Spring barley
2.30	(1957)	Spring barley
2.40	(1957)	Oats
2.60	(1957)	Corn for grain
6.00	(1955)	Corn for grain
7.00	(1957)	Grapes

He says that not much of the fruit is yet in production. They

planted 165 hectares of grapes in 1957 and 185 in 1958.

As of July 1, 1958, they had the following:

Total cattle	3,012
Milk cows	766
Hogs	5,500
Sheep	1,468
All poultry	68,000, including
chickens, ducks, and geese.	
Beehives	200

The average milk production in 1957 was 1,967 kilograms per cow. This year they are doing better and from January 1 to August 1 they had 1,400 kilograms per cow. Milk is delivered to the government except for that used for calves and some in homes. The government uses part of it for butter, part for cheese, and some for use as whole milk. The price per liter is governed by the butterfat content. Last year the average butterfat was 3.8 percent and they received 1.20 rubles per liter.

(Added later: Mr. Bulik understood 1.40 rubles instead of 1.20 but this seems too high to me.)

Of course the farm has a good many other milk cows if those of the individual family are included. These amount to about 2,300, not counting calves and heifers. He says the farm delivers 70 percent of its farm milk production to the government. I am told that the calves are weaned immediately and that the milk fed to them is counted in the total production.

As of July 1, 1958, they had the following:

Total cattle	3,012
Milk cows	766
Hogs	2,200
Sheep	1,468
All poultry	68,000, including
chickens, ducks, and geese.	
Beehives	200

The average milk production in 1957 was 1,967 kilograms per cow. This year they are doing better and from January 1 to August 1 they had 1,400 kilograms per cow. Milk is delivered to the government except for that used for calves and some in homes. The government uses part of it for butter, part for cheese, and some for use as whole milk. The price per liter is governed by the butterfat content. Last year the average butterfat was 3.8 percent and they received 1.20 rubles per liter.

(Added later: Mr. Bulik understood 1.40 rubles instead of 1.20 but this seems too high to me.)

Of course the farm has a good many other milk cows if those of the individual family are included. These amount to about 2,300, not counting calves and heifers. He says the farm delivers 70 percent of its farm milk production to the government. I am told that the calves are weaned immediately and that the milk fed to them is counted in the total production.

They take us to a field that was flooded before 1950 and
(Added later: I understand that the production of the private
that is now protected, drained, and irrigated. Here they have
cows for which they have no records, is estimated by the govern-
ment as the same as that of the farm cows for which they do

Despite all the tractors and trucks, I see green fodder being
have records. Probably this results in an estimate far too high.)
hauled with oxen.

He gives me these figures on machinery:

Tractors	47
Combine harvesters that are pulled by tractors	13
Self-propelled combine harvesters	16
Trucks	30
Cars	2

He tells me that a new Minsk tractor, the MTZ-2 or Belorus,
costs 18,200 rubles.

The average number of labor-days per family last year was 347.
Each one was worth the following:

Rubles	11
Wheat	2 kilograms
Corn (grain)	700 grams
Rice	500 grams.

And each farmer is permitted to use what fodder crops he needs.

Last year on this farm they used 10,000 tons of manure and
650 tons of mixed mineral fertilizers.

A new brick shop is being made for machines.
meeting rooms. This is in a village on a border between two

A new brick shop is being made for machines.

650 tons of mixed mineral fertilizers.

Last year on this farm they used 10,000 tons of manure and

And each farmer is permitted to use what fodder crops he needs.

Rice 200 grams.

Corn (grain) 700 grams

Wheat 2 kilograms

Rubles 11

Each one was worth the following:

The average number of labor-days per family last year was 347.

costs 18,200 rubles.

He tells me that a new Minsk tractor, the MTZ-2 or Belarus,

Cars

Trucks

30

Self-propelled combine harvesters 16

13

Combine harvesters that are pulled by tractors

Tractors

47

He gives me these figures on machinery:

have records. Probably this results in an estimate far too high.)

ment as the same as that of the farm cows for which they do

cows for which they have no records, is estimated by the govern-

(Added later: I understand that the production of the private

They take us to a field that was flooded before 1950 and that is now protected, drained, and irrigated. Here they have a good crop of rice. (K-2563)

Despite all the tractors and trucks, I see green fodder being hauled with oxen.

There seem to be so many children here I ask about the numbers and am told that they have 1,100 children in their nurseries.

We see some very nice grapes, for both table and wine. On these they use manure and superphosphate. They are pruned to 1 meter high with 8 to 12 branches per plant. (K-2564) Although now trained on wires, in the autumn they are taken down and laid on the ground so that earth may be plowed over them for winter protection. This is done in November and they are taken out in late March.

We are taken into the large wine cellar which has a capacity for 450 tons of wine. Of course we have to taste several kinds, but not every vintage of each kind!

I see some piles of "peat" bricks that are used for fuel. These are like those I had seen before but on close inspection I find they are actually made from manure, not peat. The small ones are for out-door fires and the large ones are for insulating the rooms to keep them warm in winter and cool in summer. We drive by some good corn that will run some 30 tons per hectare as silage.

We then drive up to a nice clubhouse with a theater and several meeting rooms. This is in a village on a border between two

They take us to a field that was flooded before 1950 and that is now protected, drained, and irrigated. Here they have a good crop of rice. (K-2563)

Despite all the tractors and trucks, I see green fodder being hauled with oxen.

There seem to be so many children here I ask about the numbers and am told that they have 1,100 children in their nurseries. We see some very nice grapes, for both table and wine. On these they use manure and superphosphate. They are pruned to 1 meter high with 8 to 12 branches per plant. (K-2564) Although now trained on wires, in the autumn they are taken down and laid on the ground so that earth may be plowed over them for winter protection. This is done in November and they are taken out in late March.

We are taken into the large wine cellar which has a capacity for 450 tons of wine. Of course we have to taste several kinds, but not every vintage of each kind!

I see some piles of "peat" bricks that are used for fuel. These are like those I had seen before but on close inspection I find they are actually made from manure, not peat. The small ones are for out-door fires and the large ones are for insulating the rooms to keep them warm in winter and cool in summer. We drive by some good corn that will run some 30 tons per hectare as silage.

We then drive up to a nice clubhouse with a theater and several meeting rooms. This is in a village on a border between two

collective
instead of
a banquet.
cognac, and
a whole row
the first of
discourtesy
of the club



K-2563. August 3, 1958. West of Krasnodar. Rice field on Michurin Collective Farm.



K-2564. August 3, 1958. West of Krasnodar. Table grapes on Michurin Collective Farm.

K-2563. August 3, 1958. West of Krasnodar. Rice
field on Michurin Collective Farm.

K-2564. August 3, 1958. West of Krasnodar. Table grapes
on Michurin Collective Farm.

collective farms and apparently they both use the clubhouse. So instead of going back to our hotel, late as it is, we remain for a banquet. Several courses are served with the usual vodka, cognac, and wine. Then long after we should have been through, a whole roast pig is brought in, and, of course, I have to make the first carving. Only with great effort almost bordering on discourtesy can I get our group away at 9 p.m. As we come out of the clubhouse I see a crowd of several hundred people waiting to see Americans and to greet us. I don't know how long they have been waiting. This had happened before today with smaller groups. There was even a large group at the clubhouse when we entered and at the winery.

I notice a great many bicycles in this village. It is Sunday, a rest day, and that may account for so many people being here.

One is somewhat overwhelmed by the genuine friendliness and gracious courtesy of these people. If anything, the people of the Kuban outdo those of Ukrainia. It is a great pity that a few million Americans could not have the same experience we are having.

On the way back home we have a small breakdown with the car which is quickly repaired.

After a wonderful day I am ready for bed at 11:00 p.m. The wheels

(Eddie Baranov suggests that I read Battles on the way by Galina Nikolaeva. But he doesn't know whether it is in English or not.)

collective farms and apparently they both use the clubhouse. So instead of going back to our hotel, late as it is, we remain for a banquet. Several courses are served with the usual vodka, cognac, and wine. Then long after we should have been through, a whole roast pig is brought in, and, of course, I have to make the first carving. Only with great effort almost bordering on discourtesy can I get our group away at 9 p.m. As we come out of the clubhouse I see a crowd of several hundred people waiting to see Americans and to greet us. I don't know how long they have been waiting. This had happened before today with smaller groups. There was even a large group at the clubhouse when we entered and at the winery.

I notice a great many bicycles in this village. It is Sunday, a rest day, and that may account for so many people being here. One is somewhat overwhelmed by the genuine friendliness and gracious courtesy of these people. If anything, the people of the Kuban outdo those of Ukraine. It is a great pity that a few million Americans could not have the same experience we are having. On the way back home we have a small breakdown with the car which is quickly repaired.

After a wonderful day I am ready for bed at 11:00 p.m.

August 4

I am up at 6:15, pack, and go out into the park. I sit in the park while many people pass. Obviously they are curious but do not stare because that would be discourteous.

Sitting here in this pleasant park it is hard to appreciate that this city was destroyed by the Germans and again rebuilt since 1945. No wonder that every citizen here is most deeply concerned that the Germans should never get another chance. It is not hard to blame them for wanting a buffer zone and for insisting that Germany remain divided and weak.

We have breakfast and leave for the airport about 10 a.m. I get the propoganda bulletins on shelterbelts in this Krai that I asked for yesterday. They tell me that where the soil is likely to blow it is best to space the windbreaks at distances 25 times the height of the trees. Since a full-sized poplar is 30 meters high the belts can be 750 meters apart. With thick undergrowth in the belt they insist that the effectiveness is reduced by 15 percent. They insist upon 70 centimeters from the ground to the first branch for some air to pass. In fact, with shrubs and thick undergrowth their formula becomes 15 times the height of the trees.

We have tea in the airport as guests of its director. The wheels are up for Stalingrad at 11:25.

(Eddie Baranov suggests that I read Battle on the way by Galina Nikolaeva. But he doesn't know whether it is in English or not.)

August 4

I am up at 6:15, pack, and go out into the park. I sit in the park while many people pass. Obviously they are curious but do not stare because that would be discourteous.

Sitting here in this pleasant park it is hard to appreciate that this city was destroyed by the Germans and again rebuilt since 1945. No wonder that every citizen here is most deeply concerned that the Germans should never get another chance. It is not hard to blame them for wanting a buffer zone and for insisting that Germany remain divided and weak.

We have breakfast and leave for the airport about 10 a.m. I get the propaganda bulletins on shelterbelts in this Krai that I asked for yesterday. They tell me that where the soil is likely to blow it is best to space the windbreaks at distances 25 times the height of the trees. Since a full-sized poplar is 30 meters high the belts can be 750 meters apart. With thick undergrowth in the belt they insist that the effectiveness is reduced by 15 percent. They insist upon 70 centimeters from the ground to the first branch for some air to pass. In fact, with shrubs and thick undergrowth their formula becomes 15 times the height of the trees.

We have tea in the airport as guests of its director. The wheels

are up for Stalingrad at 11:25.

(Eddie Baranov suggests that I read Battle on the way by Galina

Nikolaeva. But he doesn't know whether it is in English or not.)

that Only here and there, and mainly for fruits and vegetables, are the windbreaks as close as just recommended to me. But I do see a few that conform on some grain farms. In many places, long irregular ponds have been made by dams on the most nearly permanent streams; but there are few attempts to make ponds in the uplands. Since most of the villages are near these irregular ponds, I assume they furnish the water supply. approach Stalingrad I see many scars from shells and trend We reach the Don River south of Rostov and turn northeast toward Stalingrad. There are many meanders in the old flood plain, some several uncropped wasteland, and irregular fields. The plain above the flood plain is weakly dissected by a few narrow ravines. Some of these have nearly barren sides with mildly active gullies cutting back a few hundred yards. Within some of these natural ravines are dams for water storage. There are relatively few shelterbelts. General Paulus as his head As we go along the relief increases and I see more erosion, both gully and sheet. This worsens as we go east. Then too, some fields show small spots, thick on the ground, that may have been caused by shells. Here ravines have much accelerated erosion and many gullies. But I see no diversions, badly as they are needed. developed by cutting back I call this to the attention of Melnikov. He says that they don't need to worry about this erosion: they have plenty of soil and no time now for erosion control. Anyway, he says, such soils that erode are not used for crops, only for pasture. Yet it is plain to see that the farmers are using the soils for cereals and other crops right up to the very boundaries of these gullies. No supporting structures, mounds, can be seen from the plane in the large non-cropped areas. But I doubt

Only here and there, and mainly for fruits and vegetables, are the windbreaks as close as just recommended to me. But I do see a few that conform on some grain farms. In many places, long irregular ponds have been made by dams on the most nearly permanent streams; but there are few attempts to make ponds in the uplands. Since most of the villages are near these irregular ponds, I assume they furnish the water supply.

We reach the Don River south of Rostov and turn northeast toward Stalingrad. There are many meanders in the old flood plain, some uncropped wasteland, and irregular fields. The plain above the flood plain is weakly dissected by a few narrow ravines. Some of these have nearly barren sides with mildly active gullies cutting back a few hundred yards. Within some of these natural ravines are dams for water storage. There are relatively few shelterbelts.

As we go along the relief increases and I see more erosion, both gully and sheet. This worsens as we go east. Then too, some fields show small spots, thick on the ground, that may have been caused by shells. Here ravines have much accelerated erosion and many gullies. But I see no diversions, badly as they are needed.

I call this to the attention of Melnikov. He says that they don't need to worry about this erosion: they have plenty of soil and no time now for erosion control. Anyway, he says, such soils that erode are not used for crops, only for pasture. Yet it is plain to see that the farmers are using the soils for cereals and other crops right up to the very boundaries of these gullies. No supporting structures can be seen from the plane in the large non-cropped areas. But I doubt

that grasses and trees can stabilize the active gullies. I see few windbreaks.

As we cross the Don where it swings north, I see a body of low sand dunes on the eastern side of it.

Again I see these irregular spots and streaks in the field which have probably resulted from the war. Some have called this "war soil erosion." As we approach Stalingrad I see many scars from shells and trenches near the city.

We are down at 3:09 p.m. (Stalingrad time) and are met by several local officials and scientists. We drive 19 kilometers to the city. There are young shelterbelts along the road. It is bright, sunny, and hot.

We go to the Intourist hotel in the heart of the city, which is adjacent to a rebuilt department store used by General Paulus as his headquarters just before his surrender.

After a long wait we have a kind of lunch and dinner and at 6:10 go for a drive. The city stretches some 40 miles along the west side of the Volga but is quite narrow. The rainfall is only 220 to 240 mm. (about 9 inches). Several natural ravines have developed by cutting back from the Volga. The soil appears to be a fine sandy loam in the light Chestnut (Brown) group. Essentially all of the city was razed and completely replanned.

My guide, Mr. Larin, chief agricultural administrator for the Stalingradskaya Oblast says that this is light Chestnut soil and that about 50 to 60 percent of it is in some transitional stage toward Solonetz.

that grasses and trees can stabilize the active gullies. I see
few windbreaks.
As we cross the Don where it swings north, I see a body of
low sand dunes on the eastern side of it.
Again I see these irregular spots and streaks in the field which
have probably resulted from the war. Some have called this "war soil
erosion." As we approach Stalingrad I see many scars from shells and
trenches near the city.
We are down at 3:09 p.m. (Stalingrad time) and are met by several
local officials and scientists. We drive 19 kilometers to the city.
There are young shelterbelts along the road. It is bright, sunny, and
hot.
We go to the Intourist hotel in the heart of the city, which is
adjacent to a rebuilt department store used by General Paulus as his
headquarters just before his surrender.
After a long wait we have a kind of lunch and dinner and at 6:10
go for a drive. The city stretches some 40 miles along the west side
of the Volga but is quite narrow. The rainfall is only 220 to 240 mm.
(about 9 inches). Several natural ravines have developed by cutting
back from the Volga. The soil appears to be a fine sandy loam in
the light Chestnut (Brown) group. Essentially all of the city was
razed and completely replanned.
My guide, Mr. Larin, chief agricultural administrator for the
Stalingradskaya Oblast says that this is light Chestnut soil and that
about 50 to 60 percent of it is in some transitional stage toward Solonchaks.

At the edge of the city we pass good-sized areas with contour terraces planted to forest trees. I am told that they do have many sharp showers here.

They take us to Mamaev Hill, the highest elevation in the city and the key point in the battle of Stalingrad. (K-2652) The battle waged back and forth; but finally the Russians took it firmly with fresh troops. At the same time they crossed the Volga in force south of the town and completely enveloped the German army.

A huge "green belt" is planned as a great semi-circle to the west of the city. It will be about one to three miles wide and over 40 miles long. Terracing of the slopes is necessary and at first the trees will require some irrigation. An enormous amount of work remains to be done, including land smoothing, terracing, and removal of rubble and temporary buildings. In some places they are using a small shrub, an Artemesia locally called wormwood, for cover without irrigation.

In rebuilding the city they apparently started at the river bank and are gradually working back, except for a few new apartments rather far from the river. The back streets and roads are quite bad indeed, especially near the ravines. Some of these are deep canyons and in the bare walls one can see clearly old buried soils of earlier geologic age.

In the favored places the old land is smoothed, terraced at a very slight angle to the contour (about 1 meter per km.), and planted to fruit trees, including cherries, apples, and others. These are irrigated by pumping from pools behind small dams. The water is carried to furrows by "portable" iron pipe. (It is a good thing that

At the edge of the city we pass good-sized areas with contour terraces planted to forest trees. I am told that they do have many sharp showers here.

They take us to Mamayev Hill, the highest elevation in the city and the key point in the battle of Stalingrad. (K-2622) The battle waged back and forth; but finally the Russians took it firmly with fresh troops. At the same time they crossed the Volga in force south of the town and completely enveloped the German army.

A huge "green belt" is planned as a great semi-circle to the west of the city. It will be about one to three miles wide and over 40 miles long. Terracing of the slopes is necessary and at first the trees will require some irrigation. An enormous amount of work remains to be done, including land smoothing, terracing, and removal of rubble and temporary buildings. In some places they are using a small shrub, an Artemisia locally called wormwood, for cover without irrigation.

In rebuilding the city they apparently started at the river bank and are gradually working back, except for a few new apartments rather far from the river. The back streets and roads are quite bad indeed, especially near the ravines. Some of these are deep canyons and in the bare walls one can see clearly old buried soils of earlier geologic age.

In the favored places the old land is smoothed, terraced at a very slight angle to the contour (about 1 meter per km.), and planted to fruit trees, including cherries, apples, and others. These are irrigated by pumping from pools behind small dams. The water is carried to furrows by "portable" iron pipe. (It is a good thing that

the Russian women who have to move this pipe are very strong.)

On the higher and steeper slopes, terraces for forest trees are made at a slight angle to the contour. (K-2653)

The terracing and land smoothing runs about 2,000 rubles per hectare and the planting another 1,500 rubles.

At dark I am back to the hotel and very tired. After a cup of tea and a bath I go to bed.

K-2652. August 4, 1956. Stalingrad. Looking from Murov Hill east of southeast over part of Stalingrad and down the Volga.



K-2653. August 4, 1956. Stalingrad. Terracing of slopes for tree planting of "green belt" around the city.

the Russian women who have to move this pipe are very strong.)

On the higher and steeper slopes, terraces for forest trees

are made at a slight angle to the contour. (K-2623)

The terracing and land smoothing runs about 2,000 rubles per

hectare and the planting another 1,500 rubles.

At dark I am back to the hotel and very tired. After a cup

of tea and a bath I go to bed.

August 3

I take

of the depa

quality and

look very

gardeners

women carry

neck and st

We have



K-2652. August 4, 1958. Stalingrad. Looking from Mamaev Hill, east of southeast over part of Stalingrad and down the Volga.

area of ss

bad but th

and unpain

As we

women; but

Professor

light Ched

evidence o

structure

product

seps in te



K-2653. August 4, 1958. Stalingrad. Terracing of slopes for tree planting in "green belt" around the city.

K-2652. August 4, 1958. Stalingrad. Looking from Maimov Hill, east of southeast over part of Stalingrad and down the Volga.

K-2653. August 4, 1958. Stalingrad. Terracing of slopes for tree planting in "green belt" around the city.

August 5

I take a walk at 6:30. It is cloudless and warm. The windows of the department store nearby have things that seem reasonable in quality and price. The flowers and trees here in the parks don't look very happy. With this kind of soil and with this rainfall the gardeners have a real job. Early in the morning one sees a few women carrying heavy buckets suspended from a wooden yoke across the neck and shoulders. Of course, this is common in the villages.

We have breakfast and leave at 9:05 for the Stalingrad Agricultural Educational Institute under the Ministry of Agriculture for the USSR in the southern part of the city. We drive through a large area of small homes of industrial workers. Some of the houses are not bad but the yards are helter-skelter. Most are surrounded by uneven and unpainted board fences.

As we go into the Institute I notice a good many attractive young women; but I don't suppose their appearance is a qualifying factor. Professor Prostakov, professor of soils, shows us many monoliths of light Chestnut soil and Solonetz. Apparently any soil here with evidence of some clay accumulation in the B and firm to hard prismatic structure is called Solonetz. I see now that I have underrated the productivity of many areas in the Soviet Union by reading their soil maps in terms of our classification. In the United States we do not call a soil a Solonetz until it has a considerably stronger profile influenced by exchangeable sodium; and consequently a very difficult soil to manage. He says that proper cultivation can reduce the

August 2

I take a walk at 6:30. It is cloudless and warm. The windows of the department store nearby have things that seem reasonable in quality and price. The flowers and trees here in the parks don't look very happy. With this kind of soil and with this rainfall the gardeners have a real job. Early in the morning one sees a few women carrying heavy buckets suspended from a wooden yoke across the neck and shoulders. Of course, this is common in the villages. We have breakfast and leave at 9:05 for the Stalingrad Agricultural Educational Institute under the Ministry of Agriculture for the USSR in the southern part of the city. We drive through a large area of small homes of industrial workers. Some of the houses are not bad but the yards are helter-skelter. Most are surrounded by uneven and unpainted board fences. As we go into the Institute I notice a good many attractive young women; but I don't suppose their appearance is a qualifying factor. Professor Prostarov, professor of soils, shows us many monoliths of light Chestnut soil and Solonchaks. Apparently any soil here with evidence of some clay accumulation in the B and firm to hard prismatic structure is called Solonchaks. I see now that I have underrated the productivity of many areas in the Soviet Union by reading their soil maps in terms of our classification. In the United States we do not call a soil a Solonchak until it has a considerably stronger profile influenced by exchangeable sodium; and consequently a very difficult soil to manage. He says that proper cultivation can reduce the

exchangeable sodium from 20 to 5 percent. This involves deep plowing to 60 centimeters and washing with 5,000 cubic meters of irrigation water per hectare per year. (I am quite persuaded, perhaps incorrectly, that this Soviet system for soil classification has become so classical that they simply assume that what is called a Solonetz has 20 percent exchangeable sodium. I feel certain that many do not have anything like this much.)

He tells me that they use a species of elm widely in shelter-belts here.

With irrigation, he recommends alfalfa as a soil improving crop. With 6,000 cubic meters of water per hectare, applied in 5 doses per year they can get 30 tons of hay. (I am sure that is not an average.) In his experiments he says he gets 1.2 tons of wheat per hectare on a well-managed soil without irrigation as contrasted to 0.5 tons without improvement. This improvement involves also 5 to 12 tons per hectare of gypsum or its equivalent in waste from paper manufacture. This is only for the most solonetzic soils. For the best results with the solonetzic light Chestnut they try to plow the A horizon, the B horizon, and the lower B horizon without mixing them.

He shows me soil maps of collective farms and I try to photograph one of them. (K-2567)

This institute was started during the war. They have 33 chairs grouped in 4 faculties.

exchangeable sodium from 20 to 2 percent. This involves deep

plowing to 50 centimeters and washing with 5,000 cubic meters

of irrigation water per hectare per year. (I am quite persuaded,

perhaps incorrectly, that this Soviet system for soil classifica-

tion has become so classical that they simply assume that what is

called a Solonchak has 20 percent exchangeable sodium. I feel

certain that many do not have anything like this much.)

He tells me that they use a species of elm widely in shelter-

belts here.

With irrigation, he recommends alfalfa as a soil improving crop.

With 6,000 cubic meters of water per hectare, applied in 5 doses per

year they can get 30 tons of hay. (I am sure that is not an average.)

In his experiments he says he gets 1.2 tons of wheat per hectare on

a well-managed soil without irrigation as contrasted to 0.2 tons without

improvement. This improvement involves also 2 to 12 tons per hectare

of gypsum or its equivalent in waste from paper manufacture. This is

only for the most solonchak soils. For the best results with the

solonchak light Chestnut they try to plow the A horizon, the B horizon,

and the lower B horizon without mixing them.

He shows me soil maps of collective farms and I try to photograph

one of them. (K-2567)

This institute was started during the war. They have 33 chairs

grouped in 4 faculties.

(I call them) 1. Agronomy,^{a/} including applied soil science or agrology are some 2. Animal husbandry 3. Mechanical engineering 4. Electrical engineering They have 2,500 resident students and 1,500 correspondence students who must spend one month each year here for lectures and examinations. Some of these are older men and women of the farms who are trying to get ahead with the use of their evenings, rest days, and annual leave.

The staff of 200 includes now 15 professors, 75 masters candidates, and 120 assistants. They have an experimental farm of 25,000 hectares where resident students do practical work. Some do their practice on collective farms. The course requires 5 years, after the 7-year school or the 10-year school. The staff does some research as well as teaching. About 50 to 70 percent of the students come from the Stalingradskaya Oblast and the rest from other oblasts. They accept about 375 new students by examination from about 1,400 applicants. About half of the students in agronomy and animal husbandry are girls; but only 5 percent in engineering are girls. They will soon be prepared to accept 500 new students when their building program is completed.

^{a/} One needs to realize the strong contrast between an institute and a university. The only agricultural subject in which one may get a university degree is soil science (or pedology in the USSR.) An agriculturist can get a university degree in engineering, or in botany or zoology with specialization in pathology, physiology, or genetics. Thus "agronomy" is a kind of applied or technical course taught with the minimum of basic science as is done in many American land-grant colleges, with little or no foreign language, calculus, or advanced chemistry.

1. Agronomy,^a including applied soil science or agrology
2. Animal husbandry
3. Mechanical engineering
4. Electrical engineering

They have 2,500 resident students and 1,500 correspondence students who must spend one month each year here for lectures and examinations. Some of these are older men and women of the farms who are trying to get ahead with the use of their evenings, rest days, and annual leave.

The staff of 200 includes now 15 professors, 75 masters candidates, and 120 assistants. They have an experimental farm of 25,000 hectares where resident students do practical work. Some do their practice on collective farms. The course requires 5 years, after the 7-year school or the 10-year school. The staff does some research as well as teaching. About 50 to 70 percent of the students come from the Stalingradskaia Oblast and the rest from other oblasts. They accept about 375 new students by examination from about 1,400 applicants. About half of the students in agronomy and animal husbandry are girls; but only 5 percent in engineering are girls. They will soon be prepared to accept 500 new students when their building program is completed.

^aOne needs to realize the strong contrast between an institute and a university. The only agricultural subject in which one may get a university degree is soil science (or pedology in the USSR). An agronomist can get a university degree in engineering, or in botany or zoology with specialization in pathology, physiology, or genetics. Thus "agronomy" is a kind of applied or technical course taught with the minimum of basic science as is done in many American land-grant colleges, with little or no foreign language, calculus, or advanced chemistry.

(I can't quite account for the total student body unless there are some transfers.) Of the resident students, 1,000 live at home in or near Stalingrad, 500 board in private homes, and 1,000 live in dormitories. Eighty percent are from farms and factories. Resident students who pass their examinations are paid stipends that cover their costs.

We leave at 10:26 to visit the All-Union Scientific Research Institute of Agro-Forest Amelioration. Here we meet:

2. Soil erosion control.
1. Albenski, Anatolii Vasilevich - Vice Director of the Scientific Section of the Institute. Professor. Doctor of Agricultural Sciences. Corresponding Member of the All-Union Academy of Agricultural Sciences named after Lenin.
- The Institute has experimental stations and farms in many parts of the country, including Altay, the Volga region, Rostovskaya, Stavropol, and elsewhere on virgin soils. They work with the local station at Akmolinsk.
2. Koblev, Yurii Nikanorovich - Vice Director for Production.
3. Gorin, Timofei Ivanovich - Director of the Laboratory for Fruit and Grape Growing. Candidate of Agricultural Sciences.
4. Tsekhmistrenko, Petr Efimovich - Senior Scientific Worker. Candidate of Agricultural Sciences. Stalin Prize Winner.
5. Fedorenko, Varvara Petrovna - Junior Scientific Worker. Soils Laboratory.
6. Rastorguev, Leonid Ivanovich - Junior Scientific Worker in the Section of Soil Erosion Control. Candidate of Agricultural Sciences.
7. Golyato, Georgii Onufrievich - Director of the Laboratory for Plant Protection. Candidate of Agricultural Sciences.
8. Debelyi, Andrei Semenovich - Director of the Section for Extension Service. Candidate of Agricultural Sciences.
9. Kuznetsov, Georgii Sergeevich - Director of the Experimental Farm of the Institute.

earth. They have cherries that grow without irrigation but the other fruits require extra water. Fruits can be grown nearly 1,500 kilometers to the east. Fruit growing is increasing and some farms here specialize

(I can't quite account for the total student body unless there are some transfers.) Of the resident students, 1,000 live at home in or near Stalingrad, 500 board in private homes, and 1,000 live in dormitories. Eighty percent are from farms and factories. Resident students who pass their examinations are paid stipends that cover their costs. We leave at 10:30 to visit the All-Union Scientific Research

Institute of Agro-Forest Amelioration. Here we meet:

1. Albenski, Anatoli Vasilievich - Vice Director of the Scientific Section of the Institute. Professor. Doctor of Agricultural Sciences. Corresponding Member of the All-Union Academy of Agricultural Sciences named after Lenin.
2. Koblev, Yurii Nikanorovich - Vice Director for Production.
3. Gorin, Timofei Ivanovich - Director of the Laboratory for Fruit and Grape Growing. Candidate of Agricultural Sciences.
4. Tsekhnistrenko, Petr Efimovich - Senior Scientific Worker. Candidate of Agricultural Sciences. Stalin Prize Winner.
5. Fedorenko, Vavara Petrovna - Junior Scientific Worker. Soils Laboratory.
6. Rastorguev, Leonid Ivanovich - Junior Scientific Worker in the Section of Soil Erosion Control. Candidate of Agricultural Sciences.
7. Golysko, Georgii Onufrievich - Director of the Laboratory for Plant Protection. Candidate of Agricultural Sciences.
8. Debelyi, Andrei Semenovitch - Director of the Section for Extension Service. Candidate of Agricultural Sciences.
9. Kuznetsov, Georgii Sergeevich - Director of the Experimental Farm of the Institute.

The vice-director for science, Mr. Albenski, talks to us. He has a lovely beard but no moustache. Work is being done on the afforestation. This was recently shifted from Moscow to Stalingrad. The buildings and a whole scientific village are under construction. Now they are concentrating on three problems:

1. Planting shelterbelts to protect fields on flat or undulating soils.
2. Soil erosion control.
3. Planting forests on sandy soils so they may be cultivated in the future, if needed.

The Institute has experimental stations and farms in many parts of the country, including Altay, the Volga region, Rostovskaya, Stavropol Krai, Orlovskaya Oblast, and several others. Besides, they carry out work on state and collective farms in western Siberia and elsewhere on virgin soils. They work with the local station at Akmolinsk which we will visit.

In addition, the republics have stations on amelioration. This Institute, which comes under the Lenin Agricultural Academy, cooperates with those of the republics.

II. It is plain that they are using forest in a broad sense to include fruit- and nut-bearing trees and even grapes.

Here it gets down to -40°F. and the grapes must be covered with earth. They have cherries that grow without irrigation but the other fruits require extra water. Fruits can be grown nearly 1,500 kilometers to the east. Fruit growing is increasing and some farms here specialize

The vice-director for science, Mr. Albenaki, talks to us.

He has a lovely beard but no moustache. Work is being done on

afforestation. This was recently shifted from Moscow to Stalingrad.

The buildings and a whole scientific village are under construction.

Now they are concentrating on three problems:

1. Planting shelterbelts to protect fields on flat or undulating soils.

2. Soil erosion control.

3. Planting forests on sandy soils so they may be cultivated in

the future, if needed.

The Institute has experimental stations and farms in many parts

of the country, including Altay, the Volga region, Rostovskaya,

Stavropol Krai, Orlovskaya Oblast, and several others. Besides, they

carry out work on state and collective farms in western Siberia and

elsewhere on virgin soils. They work with the local station at

Alma-Ata which we will visit.

In addition, the republics have stations on amelioration. This

Institute, which comes under the Lenin Agricultural Academy, cooperates

with those of the republics.

It is plain that they are using forest in a broad sense to include

fruit- and nut-bearing trees and even grapes.

Here it gets down to -40°F. and the grapes must be covered with

earth. They have cherries that grow without irrigation but the other

fruits require extra water. Fruits can be grown nearly 1,500 kilometers

to the east. Fruit growing is increasing and some farms here specialize

in it. (This is another indication of local self sufficiency, partly because of poor transport.) There are 18 nurseries in the Stalingradskaya Oblast under its agricultural administration. Young saplings of 2 years cost 3.5 rubles and one-year old ones 1.5. Currants and gooseberries cost 1.5 rubles. Strawberries are 5 kopeks per plant. Many collectives have their own nurseries.

In the field we see grapes trained 7 feet high that must be taken down and covered with earth.

I look at a Meadow-Chestnut soil on an old terrace of the Volga River which is under orchard. The surface is nearly level.

- | | | | |
|------|---------------------|----------|--|
| I. | A _{p1} | 0 - 6" | Very dark grayish-brown (10YR 3/2) heavy fine sandy loam, which digs out in easily friable clods. pH is said to be 7.2. |
| | A _{p2} | 6 - 7" | Undecomposed organic matter from sawdust mulch plowed down. |
| | A ₁₂ | 7 - 13" | Very dark grayish-brown (10YR 3/2, uncrushed; (10YR 3/3, crushed) fine sandy loam. Digs out in easily friable clods. Worm holes abundant. The wavy lower boundary goes to 18 inches. |
| | A ₃ | 13 - 26" | Dark brown (10YR 3/3) sandy loam to fine sandy loam. Digs out in easily friable clods. Nearly massive in place. Moist now and firm in place. |
| II. | A _{1b} | 26 - 30" | Very dark grayish-brown (10YR 3/2) fine sandy loam. Firm in place, but digs out in easily friable clods. |
| | A _{3b} | 30 - 37" | Brown (10YR 5/3) nearly loose loamy sand. |
| III. | A _{1bb} | 37 - 47" | Very dark grayish-brown (10YR 3/2) easily friable clay loam. Very weak, very fine granular; friable; moderately plastic. |
| | B ₂ or C | 47 - 50+ | Brown (10YR 4/3) light sandy clay loam. Massive but easily removed; friable. |

in it. (This is another indication of local self sufficiency.

partly because of poor transport.) There are 18 nurseries in the

Stalingradskaya Oblast under its agricultural administration. Young

saplings of 2 years cost 3.5 rubles and one-year old ones 1.5.

Currants and gooseberries cost 1.5 rubles. Strawberries are 5 kopeks

per plant. Many collectives have their own nurseries.

In the field we see grapes trained 7 feet high that must be taken

down and covered with earth.

I look at a Meadow-Chestnut soil on an old terrace of the Volga

River which is under orchard. The surface is nearly level.

I. A₁ 0 - 6" Very dark grayish-brown (10YR 3/2) heavy
fine sandy loam, which digs out in easily
friable clods. pH is said to be 7.2.

A₂ 6 - 7" Undecomposed organic matter from sawdust
mulch plowed down.

A₃ 7 - 13" Very dark grayish-brown (10YR 3/2, unwashed;
(10YR 3/3, crushed) fine sandy loam. Digs
out in easily friable clods. Worm holes
abundant. The wavy lower boundary goes to
18 inches.

A₃ 13 - 26" Dark brown (10YR 3/3) sandy loam to fine sandy
loam. Digs out in easily friable clods. Nearly
massive in place. Moist now and firm in place.

II. A_{1b} 26 - 30" Very dark grayish-brown (10YR 3/2) fine sandy
loam. Firm in place, but digs out in easily
friable clods.

A_{3b} 30 - 37" Brown (10YR 5/3) nearly loose loamy sand.

III. A_{1bb} 37 - 47" Very dark grayish-brown (10YR 3/2) easily friable
clay loam. Very weak, very fine granular;
friable; moderately plastic.

B₂ or C 47 - 50+ Brown (10YR 4/3) light sandy clay loam. Massive
but easily removed; friable.

The pH of the surface soil is said to be 7.2 or 7.3. They need to use iron sprays here to control chlorosis.

We go from the second river terrace with the irrigated orchards and vineyards to the so-called Volga Hills. They have cherries on the lower slopes and rotations on the middle slopes with 4 years of annual grass and 2 years of spring cereals. Relatively small fields are separated by shelterbelts that serve for run-off control and for collecting snow. I also note some basin furrows in the fields. I look at a representative shelterbelt and photograph it from the north side with Mr. Melnikov. (K-2568) There are 10 rows of trees including oak, ash, elm, and others not identified, along with currants and other shrubs.

We hurry to the bank to cash some checks, have a slow lunch, and leave the hotel at 3:05 to visit a collective farm, Fortieth Anniversary of October. We drive generally south. It is hot and very dusty on these earth roads. The city is built irregularly along the river. There are narrow places and even a few gaps. Some areas are wet and salty where there are no buildings except for factories on the bank of the river. We are taken to the place where the Volga-Don canal joins the Volga. There are 13 locks on this canal. (K-2569)

I am quite irritated at our hosts for wasting an hour at this place. Even then I have trouble to get them going. I am even more irritated when I see how much we went out of the way in the cars.

The pH of the surface soil is said to be 7.2 or 7.3. They

need to use iron sprays here to control chlorosis.

We go from the second river terrace with the irrigated orchards

and vineyards to the so-called Volga Hills. They have cherries on

the lower slopes and rotations on the middle slopes with 4 years of

annual grass and 2 years of spring cereals. Relatively small fields

are separated by shelterbelts that serve for run-off control and for

collecting snow. I also note some basin furrows in the fields. I look

at a representative shelterbelt and photograph it from the north side

with Mr. Melnikov. (K-2568) There are 10 rows of trees including oak,

ash, elm, and others not identified, along with currants and other

shrubs.

We hurry to the bank to cash some checks, have a slow lunch, and

leave the hotel at 3:05 to visit a collective farm, Fortich Anniversary

of October. We drive generally south. It is hot and very dusty on these

earth roads. The city is built irregularly along the river. There are

narrow places and even a few gaps. Some areas are wet and salty where

there are no buildings except for factories on the bank of the river.

We are taken to the place where the Volga-Don canal joins the Volga.

There are 13 locks on this canal. (K-2569)

I am quite irritated at our hosts for wasting an hour at this place.

Even then I have trouble to get them going. I am even more irritated when

I see how much we went out of the way in the cars.



K-2568. August 5, 1958. Near Stalingrad. North side of shelterbelt: oak, ash, elm, and other trees; and currants and other shrubs. (V. M. Melnikov).

of October. K-2568. August 5, 1958. Near Stalingrad. North side of
shelterbelt: oak, ash, elm, and other trees; and
sandy woods. The currents and other shrubs. (V. M. Melnikov).

We drive southeast along the edge of the Canal and are soon in a treeless landscape of light chestnut soil. We cross to the south side of the Canal. Much of the soil along here is not cultivated, perhaps to protect the Canal. Back from it I saw patches of stubble, corn, meadow, corn, and then a huge field of narrow-leaved irrigated vegetation, hay, and a very few small trees. Fences along the while the shelter seen any along the steppes which have we come again to and beets that a



We come to the lock at 5:15 p.m. K-2569. August 3, 1958. South of Stalingrad. First lock in the Volga-Don Canal. The chairman is a big, handsome bachelor named Chirchikov. He lost an arm in the battle of Leningrad. He tells us that the farm has a total area of 7,500 hectares. Eighty-five percent is cultivated and 15 percent is the grassy barrens of gullies. This farm was actually founded elsewhere and moved here 5 years ago to this new place because the old place was flooded by the reservoir. There are 220 families and 1,000 people. The chairman says he needs more workers but I don't know any. The farm is 80 percent worked and 40 percent idle.

K-2569. August 3, 1958. South of Stalingrad.
First lock in the Volga-Don Canal.

We drive southwest along the edge of the Canal and are soon in a treeless landscape of light Chestnut soil. We cross to the south side of the Canal. Some of the soil along here is not cultivated, perhaps to protect the Canal. Back from it I see cereal stubble, corn, meadow, corn, and then a huge field of cereal stubble. The stubble and straw suggest about 2 tons per hectare. I see some irrigated vegetables, melons between corn rows, cabbage, alfalfa, hay, and a very large field of cereal stubble. I note piles of snow fences along the road. My guide says this is a temporary arrangement while the shelterbelts are low. They are more than "low;" I have not seen any along there. Some sheep are said to graze the uncultivated steppe which has much of this Artemesia that I saw last evening. Then we come again to irrigated vegetables, including cabbage, tomatoes, and beets that are supplied water by pumping from the Canal.

We come to the collective farm, Fortieth Anniversary of October, at 5:15 p.m. This is a new farm near a reservoir on the Volga-Don Canal. The chairman is a big, handsome bachelor named Chinchinkovski. He lost an arm in the battle of Leningrad. He tells us that the farm has a total area of 7,000 hectares. Eighty-five percent is cultivated and 15 percent is in grass because of gullies. This farm was actually founded elsewhere and moved only 5 years ago to this new place because the old farm was flooded by the reservoir. There are 220 families and 400 laborers. The chairman says he needs more workers but I don't believe it. Workers are 60 percent women and 40 percent men.

We drive southwest along the edge of the Canal and are soon in a treeless landscape of light Chestnut soil. We cross to the south side of the Canal. Some of the soil along here is not cultivated, perhaps to protect the Canal. Back from it I see cereal stubble, corn, meadow, corn, and then a huge field of cereal stubble. The stubble and straw suggest about 2 tons per hectare. I see some irrigated vegetables, melons between corn rows, cabbage, alfalfa, hay, and a very large field of cereal stubble. I note piles of snow fences along the road. My guide says this is a temporary arrangement while the shelterbelts are low. They are more than "low;" I have not seen any along there. Some sheep are said to graze the uncultivated steeps which has much of this Artemisia that I saw last evening. Then we come again to irrigated vegetables, including cabbage, tomatoes, and beets that are supplied water by pumping from the Canal.

We come to the collective farm, Fortieth Anniversary of October, at 5:15 p.m. This is a new farm near a reservoir on the Volga-Don Canal. The chairman is a big, handsome bachelor named Chinchikovskii. He lost an arm in the battle of Leningrad.

He tells us that the farm has a total area of 7,000 hectares. Eighty-five percent is cultivated and 15 percent is in grass because of gullies. This farm was actually founded elsewhere and moved only 5 years ago to this new place because the old farm was flooded by the reservoir. There are 320 families and 400 laborers. The chairman says he needs more workers but I don't believe it. Workers are 60 percent women and 40 percent men.

Fifteen hundred hectares are irrigated with water from the Volga-Don Canal. Most of this seems to be used for vegetables and some corn. The government paid the costs for irrigation and make no charges for the water. Besides they have grain without irrigation and animal husbandry. They have no shelterbelts but they are in the plan.

The chairman says they have machinery for all operations, purchased from the government, including 20 tractors, 11 combine harvesters, and 13 trucks and cars.

(I get the firm impression that this man got his job as chairman because he was a wounded veteran and a good party member, not because of his skill as an agriculturist.)

I am told that they have had dry winds from the southeast and cold ones from the northwest in winter.

There are 2,000 hectares of spring wheat. He gives us three yields in tons per hectare: 1955, 1.0; 1957, 0.6; and 1958, 1.2. (Probably 1956 was a failure.)

They have 500 hectares of corn for silage and 1,000 hectares of barley that gave 1.5 tons per hectare.

They have 200 milk cows and the plan calls for 350. In 1957, they had 2,000 liters of milk per cow and between January and August 1958, they had 1,500 liters. With better feeding, including more corn and more alfalfa-sudan hay (irrigated), they expect to have an annual average of 2,500 liters. They have 700 hogs, 10,000 chickens, 5,000 ducks, and 30 horses.

Fifteen hundred hectares are irrigated with water from the Volga-Don Canal. Most of this seems to be used for vegetables and some corn. The government paid the costs for irrigation and make no charges for the water. Besides they have grain without irrigation and animal husbandry. They have no shelterbelts but they are in the plan. The chairman says they have machinery for all operations, purchased from the government, including 20 tractors, 11 combine harvesters, and 13 trucks and cars.

(I get the firm impression that this man got his job as chairman because he was a wounded veteran and a good party member, not because of his skill as an agriculturalist.)

I am told that they have had dry winds from the southeast and cold ones from the northwest in winter.

There are 2,000 hectares of spring wheat. He gives us three yields in tons per hectare: 1955, 1.0; 1957, 0.6; and 1958, 1.2. (Probably 1956 was a failure.)

They have 500 hectares of corn for silage and 1,000 hectares of barley that gave 1.5 tons per hectare.

They have 200 milk cows and the plan calls for 350. In 1957, they had 2,000 liters of milk per cow and between January and August 1958, they had 1,500 liters. With better feeding, including more corn and more alfalfa-sudan hay (irrigated), they expect to have an annual average of 2,500 liters. They have 700 hogs, 10,000 chickens, 5,000 ducks, and 30 horses.

I try to get the rotations but I have some doubts about the accuracy of my notes since the chairman gets a lot of prompting from his agronomist, his bookkeeper, and the men from the oblast.

The seven-year rotation for irrigated areas:

1. Perennial grass, mainly alfalfa is really following

any rotation 2. Tomatoes plan:

3. Cabbage

4. Spring cereal

5. Potatoes

6. Clean fallow

7. Onions and carrots

is

This/apparently flexible and individual plots are changed according to the season. On the dry land, he says, they have one year of cereals, then occupied fallow, and again back to cereals. He says they have corn, millet, barley, or sudan grass on the occupied fallow.

They have 40 hectares of orchard plantings 2 and 3 years old. The plan calls for 300 hectares of apples, pears, plums, and cherries.

Last year 60 percent of the income was from vegetables, including cabbage, tomatoes, cucumbers, summer squash, melons, and watermelons.

The income for a standard labor-day unit last year was a total of 12 rubles, counting both cash and kind. (See later what the bookkeeper says.) Each family has .25 hectares of irrigated land. They expect 1958 to be much better. Then too, the individual families have cows that are grazed in the non-irrigated pasture.

books.)

I try to get the rotations but I have some doubts about the

accuracy of my notes since the chairman gets a lot of prompting from his agronomist, his bookkeeper, and the men from the oblast.

The seven-year rotation for irrigated areas:

1. Perennial grass, mainly alfalfa

2. Tomatoes

3. Cabbage

4. Spring cereal

5. Potatoes

6. Clean fallow

7. Onions and carrots

This apparently flexible and individual plots are changed accord-

ing to the season. On the dry land, he says, they have one year of

cereals, then occupied fallow, and again back to cereals. He says

they have corn, millet, barley, or sudan grass on the occupied fallow.

They have 40 hectares of orchard plantings 2 and 3 years old.

The plan calls for 300 hectares of apples, pears, plums, and cherries.

Last year 60 percent of the income was from vegetables, including

cabbage, tomatoes, cucumbers, summer squash, melons, and watermelons.

The income for a standard labor-day unit last year was a total

of 12 rubles, counting both cash and kind. (See later what the

bookkeeper says.) Each family has .25 hectares of irrigated land.

They expect 1958 to be much better. Then too, the individual families

have cows that are grazed in the non-irrigated pasture.

The vegetables and milk go mainly to Stalingrad. As usual, they sell 70 percent of their production. They receive 1.2 rubles per liter.

Now he gives me a rotation for the non-irrigated land with so much prompting and hesitation that I don't believe he is really following any rotation despite the plan:

1. Crested wheatgrass	15	700	5	14.5
2. Crested wheatgrass	20	223	30	145
3. Spring grain	34	180	18	140
4. Spring grain	320	30	40	9
5. Millet	138	23	110	40
6. Corn for silage	-	-	100	10.5
7. Spring grain	-	-	60	-
Earnings per labor-day in 1957 were: 2 kg. grain, 0.5 kg. vegetables and 4 rubles.				
9. Winter rye for occupied fallow				

The head bookkeeper says that 1956 was a poor year. The farm is 83 kilometers from Stalingrad in the Gerdishanski rayon. As of June 1, 1958 the livestock numbered: 163 milk cows, with an average milk production from January 1, to June 1, 1958 of 670 liters. This farm is organized into brigades and these into teams. Each team has a specific area to look after.

As we leave for the field I ask Mr. Bulik to remain with the bookkeeper to see if he can get some reasonable records. (He tells me later that this took quite a lot of consulting and digging into books.)

The vegetables and milk go mainly to Stalingrad. As usual, they sell 70 percent of their production. They receive 1.2 rubles per liter.

Now he gives me a rotation for the non-irrigated land with so much prompting and hesitation that I don't believe he is really following any rotation despite the plan:

1. Crested wheatgrass

2. Crested wheatgrass

3. Spring grain

4. Spring grain

5. Millet

6. Corn for silage

7. Spring grain

8. Barley

9. Winter rye for occupied fallow

So far they do not use fertilizers on the unirrigated soil except,

he says, for side dressings on corn. Until now they haven't used

fertilizer on the irrigated soil but have just purchased 500 tons of

superphosphate. Farm manure is used only in hot beds.

This farm is organized into brigades and these into teams. Each

team has a specific area to look after.

As we leave for the field I ask Mr. Bulik to remain with the

bookkeeper to see if he can get some reasonable records. (He tells

me later that this took quite a lot of consulting and digging into

books.)

His table follows:

Many of the fruits are small and pear shaped. They have an irregular

	1955			1957			1958		
Yield			Yield			Yield			
Crop	Hectares	C/HA	Hectares	C/HA	Hectares	C/HA	Hectares	C/HA	
Spring									
Wheat	2,000	8	2,000	7	1,800	15			
Winter									
Rye	840	10	335	8	450	16			
Barley	770	15	700	5	900	14.5			
Tomatoes	20	223	30	145	-	-			
Cabbage	34	180	18	140	-	-			
Annual									
Grasses	320	30	40	9	-	-			
Corn	138	23	110	40	-	-			
Perennial									
Grasses	-	-	100	10.5	-	-			
Orchards	-	-	60	-	-	-			

Earnings per labor-day in 1957 were: 2 kg. grain, 0.5 kg. vegetables and 4 rubles.

The head bookkeeper says that 1956 was a poor year. The farm is 83 kilometers from Stalingrad in the Gorodishenski Rayon. As of June 1, 1958 the livestock numbered:

163 milk cows, with an average milk production from January 1, to June 1, 1958 of 670 liters.

170 forage cows

525 hogs, of which 25 are sows

We go into the field. The soils are light Chestnut (Brown) of varying degrees of Solonetz influence. Plowed fields have a slight reddish color. Irrigated home plots have sunflowers, vegetables, corn, and a few flowers.

His table follows:

	1955	1957	1958
Crop	Hectares	C/HA	Yield
Spring			
Wheat	2,000	8	2,000
Winter			
Rye	840	10	335
Barley	770	12	700
Tomatoes	20	223	30
Cabbage	34	180	18
Annual			
Grasses	320	30	40
Corn	138	23	110
Perennial			
Grasses	-	-	10.2
Orchards	-	-	60

Earnings per labor-day in 1957 were: 2 kg. grain, 0.5 kg. vegetables

and 4 rubles.

The head bookkeeper says that 1956 was a poor year. The farm is 83 kilometers from Stalingrad in the Gorodishenski Rayon. As of June 1,

1958 the livestock numbered:

163 milk cows, with an average milk production from January 1, to

June 1, 1958 of 670 liters.

170 forage cows

525 hogs, of which 25 are sows

We go into the field. The soils are light Chestnut (Brown) of

varying degrees of Solonchak influence. Plowed fields have a slight

reddish color. Irrigated home plots have sunflowers, vegetables, corn,

and a few flowers.

I go out and look at the tomatoes. The plants are quite small. Many of the fruits are small and pear shaped. They have an irregular slip-shod irrigation system. (K-2570; K-2571; K-2572) It is a good thing they don't have to pay for the water; or perhaps if they did they might do a better job. They claim 25 to 30 tons per hectare, with prompting from our guides, but the crop doesn't look that good to me.

Then we look at the corn from which they expect between 20 to 25 tons per hectare for silage; but it looks hardly that good to me. We have an interesting confusion here. Some say it has been irrigated but the chairman says not. He says they made the irrigation furrows but that it rained and they didn't need to use them!

I look very hurriedly indeed at the solonetzic soil. Locally this is called a Solonetz in the light Chestnut zone. We would call it a solonetzic Brown soil.

- | | | |
|-----------------|----------|--|
| A ₁ | 0 - 4" | Reddish- to grayish-brown, granular silty clay loam, with surface one-half inch of granular mulch. |
| B ₂ | 4 - 10" | Dark brown (7.5YR 3/4) clay with moderate to strong prismatic structure. Fairly easily friable. |
| B ₃₁ | 10 - 16" | Brown (7.5YR 5/3) weak, coarse prismatic clay. Firm. |
| B ₃₂ | 16 - 42+ | The soil gradually fades to light brown (7.5YR 6/3) silt loam; weak, coarse prismatic. Soil digs out in coarse hard-to-crush blocks. |

The soil has carbonates below 10 inches. The surface is gently sloping but cut here and there with natural ravines. The soil has a nearly complete cover of grass and Artemesia (unidentified species.)

I go out and look at the tomatoes. The plants are quite small.

Many of the fruits are small and pear shaped. They have an irregular

ship-shaped irrigation system. (K-2570; K-2571; K-2572) It is a good

thing they don't have to pay for the water; or perhaps if they did

they might do a better job. They claim 25 to 30 tons per hectare,

with prompting from our guides, but the crop doesn't look that good

to me.

Then we look at the corn from which they expect between 20 to

25 tons per hectare for silage; but it looks hardly that good to me.

We have an interesting confusion here. Some say it has been irrigated

but the chairman says not. He says they made the irrigation furrows

but that it rained and they didn't need to use them!

I look very hurriedly indeed at the solonchak soil. Locally this

is called a Solonchak in the light Chestnut zone. We would call it a

solonchak Brown soil.

A ₁	0 - 4"	Reddish- to grayish-brown, granular silty clay loam, with surface one-half inch of granular mulch.
----------------	--------	--

B ₂	4 - 10"	Dark brown (7.5YR 3/4) clay with moderate to strong prismatic structure. Fairly easily friable.
----------------	---------	---

B ₃₁	10 - 16"	Brown (7.5YR 5/3) weak, coarse prismatic clay. Firm.
-----------------	----------	--

B ₃₂	16 - 42+	The soil gradually fades to light brown (7.5YR 6/3) silt loam; weak, coarse prismatic. Soil digs out in coarse hard-to-crush blocks.
-----------------	----------	--

The soil has carbonates below 10 inches. The surface is gently

sloping but cut here and there with natural ravines. The soil has a

nearly complete cover of grass and Artemisia (unidentified species).



K-2570. August 5, 1958. South of Stalingrad. Irrigated tomatoes on Fortieth Anniversary of October Collective Farm.



K-2571. August 5, 1958. South of Stalingrad. On Fortieth Anniversary of October Collective Farm. Cracking along irrigation furrow of solonetzic Brown soil. (Tomato).

2570

is from K-2570. August 5, 1958. South of Stalingrad. Irrigated
tomatoes on Fortieth Anniversary of October Collec-
tive Farm.

K-2571. August 5, 1958. South of Stalingrad. On Fortieth
Anniversary of October Collective Farm. Cracking
along irrigation furrow of solonchak Brown soil.
(Tomato).

Too bad that it is nearly dark now.

Here I was told that one collective farm in this area growing sheep had such a good income that the workers received 10,000 rubles apiece and the chairman 100,000 rubles.

Now we go to dinner on the farm with abundant food, drink.



K-2572. August 5, 1958. South of Stalingrad. Field workers on Fortieth Anniversary of October Collective Farm.

K-2572. August 2, 1958. South of Stalingrad. Field workers on
Fortieth Anniversary of October Collective Farm.

Too bad that it is nearly dark now.

Here I was told that one collective farm in this area growing sheep had such a good income that the workers received 10,000 rubles apiece and the chairman 100,000 rubles.

Now we go to dinner on the farm with abundant food, drinks, and toasts. (I am reasonably certain that the supervisory waitress works in our hotel in Stalingrad.)

We leave at 9 p.m. for the long trip back to the Intourist hotel. I am in my room and very tired at 10:30.

This has not been one of the good days. I believe the Oblast officials have given us rather more from plans than performance. Actually I think they expect more from these soils of a semi-arid climate than can be delivered with current practices. They talk a lot about terraces and diversions but except for the "green belt" around Stalingrad they are rare. (Added later: Nor did I see any from the plane the next day.)

diversions and small structures are needed to stop the growth of gullies. Not a great deal would be required, except very near the river; but plants alone will not do the job. More contour stripcropping should be planned near the ravines and small streams. On some parts of the escarpments near the streams I see mildly developed badlands that could be controlled with diversion terraces and chutes and protection against grazing. (I shall need to say, however, that I have seen very little overgrazing.)

Too bad that it is nearly dark now.

Here I was told that one collective farm in this area

growing sheep had such a good income that the workers received

10,000 rubles apiece and the chairman 100,000 rubles.

Now we go to dinner on the farm with abundant food, drinks,

and toasts. (I am reasonably certain that the supervisory waitress

works in our hotel in Stalingrad.)

We leave at 9 p.m. for the long trip back to the Intourist hotel.

I am in my room and very tired at 10:30.

This has not been one of the good days. I believe the Oblast

officials have given us rather more from plans than performance.

Actually I think they expect more from these soils of a semi-arid

climate than can be delivered with current practices. They talk a

lot about terraces and diversions but except for the "green belt"

around Stalingrad they are rare. (Added later: Nor did I see any

from the plane the next day.)

August 6

We are up at 5:20 a.m., pack, and leave for the airport at 6:15. Marlin is ill. The others have been ill for a little bit except for the interpreter and me. I can only hope that my luck holds out.

This is a lovely, dry, warm morning. On the way to the airport we pass much unoccupied land with micro-relief from the war. We pass a section of the "green belt" with trees about 5 to 8 feet high. There is an outside row of Russian olive. The trees include a narrow-leaved elm, ash, some poplar, wild apple, and a few other unidentified sorts.

A very few minutes after arrival at the airport the wheels are in the air for Moscow at 6:58 a.m. local time or 5:58 Moscow time.

In the fields I see trenches and shell holes still being worked around by the farmers. Many hectares need land smoothing by bulldozers. But more important, diversions and small structures are needed to stop the growth of gullies. Not a great deal would be required, except very near the river; but plants alone will not do the job. More contour stripcropping should be planned near the ravines and small streams. On some parts of the escarpments near the streams I see mildly developed badlands that could be controlled with diversion terraces and chutes and protection against grazing. (I shall need to say, however, that I have seen very little overgrazing.)

a bit of breakfast.

August 6

We are up at 5:20 a.m., pack, and leave for the airport at 6:15. Martin is ill. The others have been ill for a little bit except for the interpreter and me. I can only hope that my luck holds out.

This is a lovely, dry, warm morning. On the way to the airport we pass much unoccupied land with micro-relief from the war. We pass a section of the "green belt" with trees about 5 to 8 feet high. There is an outside row of Russian olive. The trees include a narrow-leaved elm, ash, some poplar, wild apple, and a few other unidentified sorts.

A very few minutes after arrival at the airport the wheels are in the air for Moscow at 6:58 a.m. local time or 5:58 Moscow time. In the fields I see trenches and shell holes still being worked around by the farmers. Many hectares need land smoothing by bulldozers. But more important, diversions and small structures are needed to stop the growth of gullies. Not a great deal would be required, except very near the river; but plants alone will not do the job. More contour stripcropping should be planned near the ravines and small streams. On some parts of the escarpments near the streams I see mildly developed badlands that could be controlled with diversion terraces and chutes and protection against grazing. (I shall need to say, however, that I have seen very little overgrazing.)

In about 100 miles we are over dark Chestnut soils that are nearly all cropped, except near the fairly well vegetated shallow ravines. I see cereal stubble, sunflowers, meadow, fallow, and quite a few young shelterbelts and young tree plantings along the margins of shallow ravines and at the heads of gullies where we would recommend diversions. Here too, farmers plow around some old military diggings and possible deep shell holes. A few ponds have been made along the streams. all the land is cultivated except along the fairly well-

I see patches of natural forest and we are moving into Chernozem, Here near the drainageways I see some rather bad erosion problems that will not be solved by vegetation alone. (7:47 a.m.).

The land is greener now and quite densely populated as we pass into the "forest steppe zone." (8:15 a.m.)

Then we have clouds. Ordinary planes like this take 24 passengers. They are similar to many in the United States but have no seat belts and apparently serve no breakfast tea. I have 1½ glasses of tea in my room and 2 apples; but that hardly takes care of the problem.

As we approach Moscow about one-fourth to one-third of the land is forested. The landscape resembles the northern part of our Gray-Brown Podzolic zone. it is too hazy to see clearly. In places a few

The wheels are down at 9:10 Moscow time. We leave some of our books and I leave soil samples with the Assistant Agricultural Attaché, who comes to meet us; but he forgot to bring our mail! Then we have a bit of breakfast. 30 minutes out of Tashkent, we are over a nearly level

In about 100 miles we are over dark Chestnut soils that are nearly all cropped, except near the fairly well vegetated shallow ravines. I see cereal stubble, sunflowers, meadow, fallow, and quite a few young shelterbelts and young tree plantings along the margins of shallow ravines and at the heads of gullies where we would recommend diversions. Here too, farmers plow around some old military diggings and possible deep shell holes. A few ponds have been made along the streams.

I see patches of natural forest and we are moving into Chernozem. Here near the drainageways I see some rather bad erosion problems that will not be solved by vegetation alone. (7:47 a.m.).

The land is greener now and quite densely populated as we pass into the "forest steppe zone." (8:15 a.m.).

Then we have clouds. Ordinary planes like this take 24 passengers. They are similar to many in the United States but have no seat belts and apparently serve no breakfast tea. I have 1 1/2 glasses of tea in my room and 2 apples; but that hardly takes care of the problem.

As we approach Moscow about one-fourth to one-third of the land is forested. The landscape resembles the northern part of our Gray-Brown Podzolic zone.

The wheels are down at 9:10 Moscow time. We leave some of our books and I leave soil samples with the Assistant Agricultural Attache, who comes to meet us; but he forgot to bring our mail! Then we have a bit of breakfast.

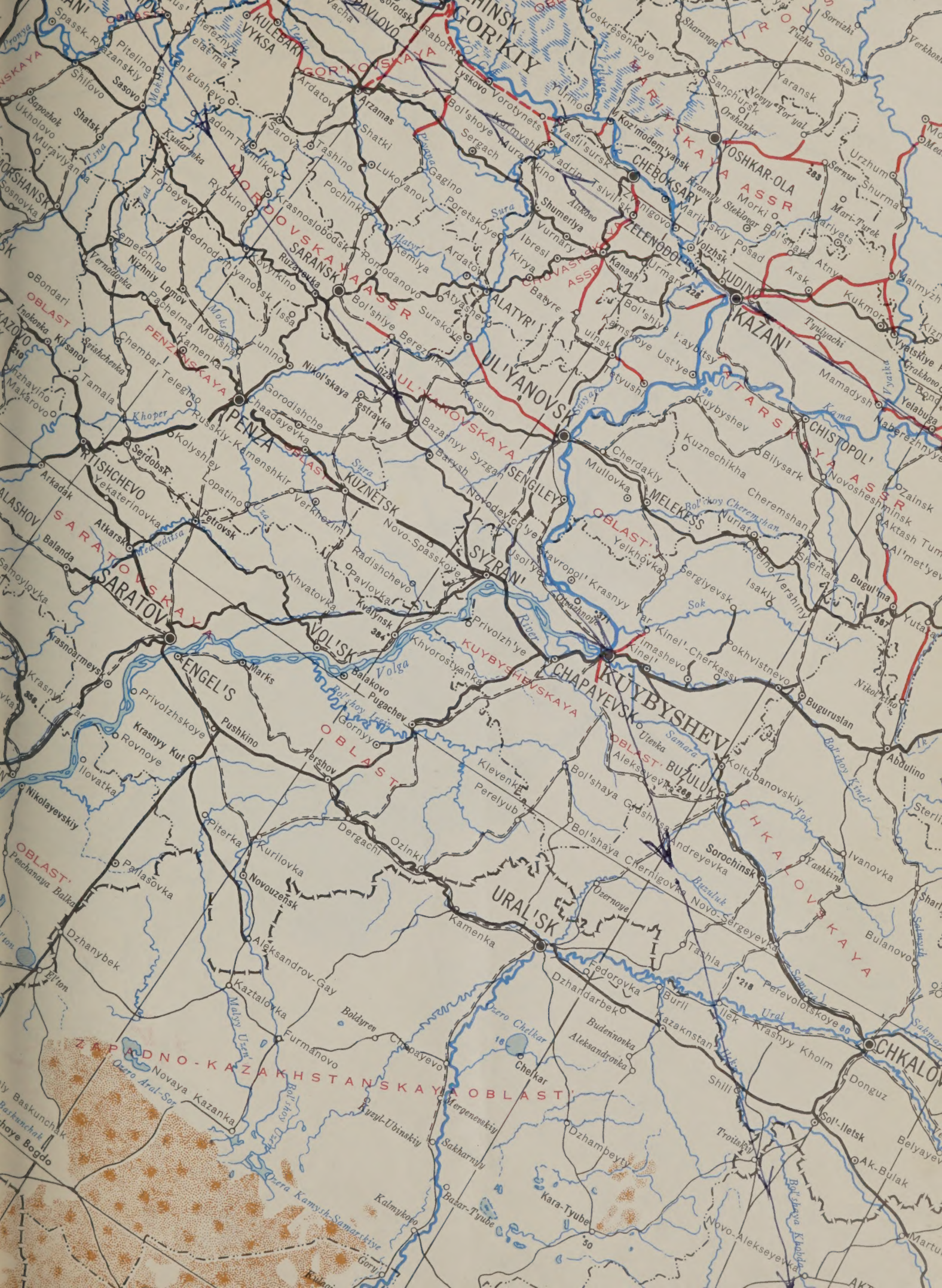
About 11 a.m. we board the big jet plane for Tashkent. The wheels leave the ground at 11:27. This is a very smooth plane. We fly a little above 30,000 feet at around 550 to 600 m.p.h. For some reason they have seat straps and the hostess insists they be fastened. I have no idea why.

For the first hour out of Moscow we are above solid clouds. Then they break but it is a bit hard to see at this elevation. Nearly all the land is cultivated except along the fairly well-trenched, winding drainageways. Here too, many gullies are working back into what appears to be an undulating plain. This looks like moderate accelerated erosion. Diversion terraces would probably control this and conserve a lot of water. I guess that more than one-half the land has cereal stubble.

Then clouds again! Later, we go over dissected, rolling desert land and soon (1:37 p.m.) cross the northern boundary of the Aral Sea. I see few signs of human occupation along the coast from this great height. The Syr-Darya River (equals "quite river") is very muddy and has a considerable delta where it empties into the sea.

The desert to the south and east is undulating to rolling. There are some playas but it is too hazy to see clearly. In places a few small irregular fields have been cultivated. I see a few animals, probably camels. Some areas appear as pale reddish-yellow, nearly barren, stony, hilly soil. Then clouds over this desert! At 2:27 p.m., presumably some 30 minutes out of Tashkent, we are over a nearly level

About 11 a.m. we board the big jet plane for Tashkent. The
 wheels leave the ground at 11:25. This is a very smooth plane.
 We fly a little above 30,000 feet at around 250 to 600 m.p.h.
 For some reason they have seat straps and the hostess insists
 they be fastened. I have no idea why.
 For the first hour out of Moscow we are above solid clouds.
 Then they break but it is a bit hard to see at this elevation.
 Nearly all the land is cultivated except along the fairly well-
 trenched, winding drainage ways. Here too, many gullies are working
 back into what appears to be an undulating plain. This looks like
 moderate accelerated erosion. Diversion terraces would probably
 control this and conserve a lot of water. I guess that more than
 one-half the land has cereal stubble.
 Then clouds again! Later, we go over dissected, rolling desert
 land and soon (1:37 p.m.) cross the northern boundary of the Aral Sea.
 I see few signs of human occupation along the coast from this great
 height. The Syr-Darya River (equals "putte river") is very muddy
 and has a considerable delta where it empties into the sea.
 The desert to the south and east is undulating to rolling. There
 are some playas but it is too hazy to see clearly. In places a few
 small irregular fields have been cultivated. I see a few animals,
 probably camels. Some areas appear as pale reddish-yellow, nearly
 barren, stony, hilly soil. Then clouds over this desert! At 2:22 p.m.,
 presumably some 30 minutes out of Tashkent, we are over a nearly level





undissected, grayish-brown desert with a few salty playas and shallow stream beds. Six minutes later I see a few fields and some dwellings. There is a green strip along the Syr-Darya River; and then again back into desert. Our pilot is dropping the plane so we must be nearing Tashkent a little ahead of schedule. The trip is supposed to take 3 hours and 25 minutes.

Now I see more cereal fields in nearly level favored places. These are laid out in huge rectangles in clear divisions. These are few however since the relief is quite choppy. I see several large flocks of animals that are probably sheep, and more roads.

As we come near the ground the land is completely dissected but the slopes are rounded and essentially stabilized. Perhaps the desert I have just passed over has a similar choppy mezzo-relief. Then I see two more of these large fields with cereal stubble. I should think that some of the grain would need to be cut by hand because of the mezzo-relief. I take a brief walk and go to bed.

At 2:45 we are over a partially irrigated soil with villages; but except for the flood plains along local streams, the uplands have this bold mezzo-relief. Next we pass over dryland cereal stubble and grazing land in front of a large area of irrigated soil.

The wheels are down at 2:53, which is 5:53 Tashkent time.

We are met by a large delegation including representatives of the Ministry of Agriculture of the Uzbek Republic.

undissected, grayish-brown desert with a few salty playas and shallow stream beds. Six minutes later I see a few fields and some dwellings. There is a green strip along the Syr-Darya River; and then again back into desert. Our pilot is dropping the plane so we must be nearing Tashkent a little ahead of schedule. The trip is supposed to take 3 hours and 25 minutes.

Now I see more cereal fields in nearly level favored places. These are laid out in huge rectangles in clear divisions. These are few however since the relief is quite choppy. I see several large flocks of animals that are probably sheep, and more roads.

As we come near the ground the land is completely dissected but the slopes are rounded and essentially stabilized. Perhaps the desert I have just passed over has a similar choppy meso-relief. Then I see two more of these large fields with cereal stubble. I should think that some of the grain would need to be cut by hand because of the meso-relief.

At 2:45 we are over a partially irrigated soil with villages; but except for the flood plains along local streams, the uplands have this bold meso-relief. Next we pass over dryland cereal stubble and grazing land in front of a large area of irrigated soil.

The wheels are down at 2:53, which is 2:53 Tashkent time. We are met by a large delegation including representatives of the Ministry of Agriculture of the Uzbek Republic.

It takes quite a while to get our baggage, which reminds me of the Washington airport. We get into an Intourist bus for the hotel at 6:26.

There are many trees along the streets. Water flows in small narrow ditches between the roadway and the sidewalk. These ditches supply water to the householders and serve to carry away the refuse after the custom in the Near East.

It is warm but not hot today. Yesterday it was 104°F. But I explain that the Americans always bring good weather - dry weather for Minsk and cool weather for Tashkent.

The railway station and many other buildings are painted a pale pea-green, although some are white or yellow. The majority of the people on the street are dressed like those in Russian cities although a few wear the typical Uzbek skullcaps.

We are assigned rooms at the Tashkent hotel where we have a quiet dinner. I take a brief walk and go to bed.

It takes quite a while to get our baggage, which reminds me

of the Washington airport. We get into an incourist bus for the

Hotel at 6:30.

There are many trees along the streets. Water flows in small

narrow ditches between the roadway and the sidewalk. These ditches

supply water to the householders and serve to carry away the refuse

after the custom in the West East.

If it is warm but not hot today. Yesterday it was 104° F. But I

explain that the Americans always bring good weather - dry weather

for Minsk and cool weather for Tashkent.

The railway station and many other buildings are painted a pale

pea-green, although some are white or yellow. The majority of the

people on the street are dressed like those in Russian cities although

a few wear the typical Uzbek skullcaps.

that We are assigned rooms at the Tashkent hotel where we have a

quiet dinner. I take a brief walk and go to bed.



TASHKENT
ANDIZHAN
ALMA ATA

August 7

I am up about 6:30 and go for a walk in the main square where a beautiful theater and opera house called Alisher Navoi, is nearly completed. (K-2573) As in Russian cities women are out early sweeping the streets and sidewalks. Mainly they sweep up the fallen leaves and twigs. (K-2574) Citizens of the Soviet Union drop very little rubbish on the streets, only a small fraction of that dropped by American citizens. After 2 or 3 days in the country one doesn't even drop burnt matches on the sidewalk.

After breakfast we have a short wait for our hosts and are then taken at 10:25 to the Ministry of Agriculture of the Uzbek Republic. Our hosts include the Vice-Minister, Mr. Igamberdyev; the Vice-Minister of Water Economy, Mr. Korzhavin; the Director of Research in the Institute of Irrigation, Mr. Nadzhimov; the senior scientific worker in soils at the Academy, Mr. Umarov; the director of research on fertilizers, Mr. Popov; and the chief of economic planning in the Ministry of Agriculture, Mrs. Kuznetsova.

This Republic has an area of 409 square kilometers with 9 oblasts in it. The Fergana Valley, east and a little south of Tashkent is called the, "Diamond of the Republic."

The land area is summarized as follows:

Total agricultural land	45,000,000 hectares
Collective farms	14,000,000 hectares
State farms	10,000,000 hectares

August 7

I am up about 6:30 and go for a walk in the main square where

a beautiful theater and opera house called Alisher Navoi, is nearly completed. (K-2573) As in Russian cities women are out early sweeping the streets and sidewalks. Mainly they sweep up the fallen leaves and twigs. (K-2574) Citizens of the Soviet Union drop very little rubbish on the streets, only a small fraction of that dropped by American citizens. After 2 or 3 days in the country one doesn't even drop burnt matches on the sidewalk.

After breakfast we have a short wait for our hosts and are then

taken at 10:25 to the Ministry of Agriculture of the Uzbek Republic.

Our hosts include the Vice-Minister, Mr. Igamberdyev; the Vice-Minister

of Water Economy, Mr. Korshavin; the Director of Research in the Institute

of Irrigation, Mr. Nabdzhimov; the senior scientific worker in soils

at the Academy, Mr. Umarov; the director of research on fertilizers,

Mr. Popov; and the chief of economic planning in the Ministry of

Agriculture, Mrs. Kuznetsova.

This Republic has an area of 409 square kilometers with 9 oblasts

in it. The Fergana Valley, east and a little south of Tashkent is

called the "Diamond of the Republic."

The land area is summarized as follows:

Total agricultural land	45,000,000 hectares
Collective farms	14,000,000 hectares
State farms	10,000,000 hectares



K-2573. August 7, 1958. Tashkent. Theater, by 1965. Obviously all Alisher Navoi, in Central square.



K-2574. August 7, 1958. Tashkent. Central square in early morning.

a/ Lint cotton would be about 33 to 40 percent of these figures.

K-2573. August 7, 1958. Tashkent. Theater,
Alisher Navoi, in Central square.

K-2574. August 7, 1958. Tashkent. Central square
in early morning.

Government reserve 21,000,000 hectares

Arable land 3,660,000 hectares

Irrigated land 2,513,000 hectares

Upland dryland 1,147,000 hectares

Before the Revolution they had only 75,000 irrigated hectares.

For centuries people here had been dreaming of irrigation. Before the first five-year plan they had around 70,000 hectares irrigated.

Two hundred and fifty thousand were added during the first and second plans; another 600,000 between 1937 and 1952; some 87,000 between 1952 and 1957; and plans call for another 533,000 to be irrigated by 1965. Obviously all of this irrigation has had a drastic influence on farm life.

They have 1,400 collective farms and 133 state farms. Obviously the state farms are much larger and most are newly organized with the reclamation. Cotton growing dominates and this Republic produces two-thirds of the cotton of the USSR.

They give me the following figures for selected years:

Year	Hectares	Yield of seed cotton ^{a/} in tons per hectare
1913	423,000	1.22
1940	920,000	1.5
1956	1,304,000	2.1
1957	1,288,000	2.1

^{a/} Lint cotton would be about 35 to 40 percent of these figures.

Government reserve	21,000,000 hectares
Arable land	3,660,000 hectares
Irrigated land	2,213,000 hectares
Upland dryland	1,147,000 hectares

Before the Revolution they had only 75,000 irrigated hectares. For centuries people here had been dreaming of irrigation. Before the first five-year plan they had around 70,000 hectares irrigated. Two hundred and fifty thousand were added during the first and second plans; another 600,000 between 1937 and 1952; some 87,000 between 1952 and 1957; and plans call for another 233,000 to be irrigated by 1965. Obviously all of this irrigation has had a drastic influence on farm life.

They have 1,400 collective farms and 133 state farms. Obviously the state farms are much larger and most are newly organized with the reclamation. Cotton growing dominates and this Republic produces two-thirds of the cotton of the USSR.

They give me the following figures for selected years:

Year	Hectares	Yield of seed cotton in tons per hectare
1913	423,000	1.22
1940	920,000	1.5
1956	1,304,000	2.1
1957	1,288,000	2.1

a/ Lint cotton would be about 35 to 40 percent of these figures.

Gradually they have given up cotton in nonirrigated areas because of low yields. Then too, they have expanded the growing of jute and kenaf to 20,000 hectares.

They have 916,000 hectares under various grains including 32,000 of paddy rice.

For stock they grow corn or sorgo, a kind of millet called "jugara," on 480,000 hectares. They also have some corn for grain.

Second after cotton comes silkworm breeding. In 1913 they produced 3,960 tons of cocoons; and in 1956, 14,631 tons.

Of third importance is karakul. They produce 1,500,000 skins annually, or two-thirds of the production of the Soviet Union.

The other livestock is summarized as follows:

Dairy cattle, 500,000. This includes those owned by individual families.

Goats, 400,000 on farms.

Donkeys, 50,000. They are trying to reduce these.

(Added later: They didn't like us to take pictures of them.

The Russians, not the Uzbeks, are ashamed of this symbol of poverty.)

Horses, 350,000 on farms.

Camels, 80,000 in the desert.

Poultry, no figures but they have chickens, geese, ducks, and turkeys.

They say that the Republic produces about one-half of its own food and livestock products.

percent of the plowing is done by machines. Only small plots are done by horses. About 98 percent of the cotton is planted by machines

Gradually they have given up cotton in nonirrigated areas because of low yields. Then too, they have expanded the growing

of jute and kenaf to 20,000 hectares.

They have 916,000 hectares under various grains including

32,000 of paddy rice.

For stock they grow corn or sorgho, a kind of millet called "jagara," on 480,000 hectares. They also have some corn for grain.

Second after cotton comes silkworm breeding. In 1913 they

produced 3,960 tons of cocoons; and in 1956, 14,631 tons.

Of third importance is karakul. They produce 1,500,000 skins

annually, or two-thirds of the production of the Soviet Union.

The other livestock is summarized as follows:

Dairy cattle, 500,000. This includes those owned by

individual families.

Goats, 400,000 on farms.

Donkeys, 50,000. They are trying to reduce these.

(Added later: They didn't like us to take pictures of them.)

The Russians, not the Uzbeks, are ashamed of this symbol of poverty.)

Horses, 350,000 on farms.

Camels, 80,000 in the desert.

Poultry, no figures but they have chickens, geese, ducks,

and turkeys.

They say that the Republic produces about one-half of its own

food and livestock products.

Although the winters are cold, climate and soil favor fruits and melons. I sample some of these melons and they are exceedingly fine. It is said that some of them weigh as much as 60 kilograms.

Plans call for expanding these crops. In 1917 they had 18,000 hectares of orchard and 26,000 hectares of grapes; now the figures are 80,000 and 30,000 respectively. In 1954 a disastrous early frost killed many of their fruit trees.

Among the crops grown are winter wheat, spring wheat, barley, corn, oats, a little rye, grain sorghum, pulses, tobacco, seed flax, sesame, potatoes, alfalfa, fodder crops, pomegranates, figs, vegetables, and vegetable seeds.

I am told that all their great progress has been due to Soviet power, machinery, and the organization of collective farms. Before the Revolution they had essentially no machinery, only 1,000 metal plows, 337 harrows, and 12 seed drills. Then the main implement was the wooden plow of which there were 135,000.

Now the collective farms have 25,087 tractors and the state farms 11,000 with a total horsepower of 700,000. In addition they have 14,600 cotton pickers, 4,387 machines for picking unopened cotton bolls, 13,770 machines for removing cotton shrubs, and 8,345 machines for cleaning the cotton from unopened bolls. Then besides, they have in the machine and tractor stations trucks, cars, planes, seed drills, cultivators, graders, bulldozers, ditchdiggers, etc. Ninety-eight percent of the plowing is done by machines. Only small plots are done by horses. About 98 percent of the cotton is planted by machines

Although the winters are cold, climate and soil favor fruit
and melons. I sample some of these melons and they are exceedingly
fine. It is said that some of them weigh as much as 60 kilograms.
Plans call for expanding these crops. In 1917 they had 18,000
hectares of orchard and 26,000 hectares of grapes; now the figures
are 80,000 and 30,000 respectively. In 1924 a disastrous early
frost killed many of their fruit trees.
Among the crops grown are winter wheat, spring wheat, barley,
corn, oats, a little rye, grain sorghum, pulses, tobacco, seed flax,
sesame, potatoes, alfalfa, fodder crops, pomegranates, figs, vegetables,
and vegetable seeds.
I am told that all their great progress has been due to Soviet
power, machinery, and the organization of collective farms. Before
the Revolution they had essentially no machinery, only 1,000 metal
plows, 337 harrows, and 12 seed drills. Then the main implement was
the wooden plow of which there were 135,000.
Now the collective farms have 25,087 tractors and the state farms
11,000 with a total horsepower of 700,000. In addition they have
14,600 cotton pickers, 4,387 machines for picking unopened cotton
bolls, 13,770 machines for removing cotton shrubs, and 8,345 machines
for cleaning the cotton from unopened bolls. Then besides, they have
in the machine and tractor stations trucks, cars, planes, seed drills,
cultivators, graders, bulldozers, ditchdiggers, etc. Ninety-eight
percent of the plowing is done by machines. Only small plots are
done by horses. About 98 percent of the cotton is planted by machines

and 97 percent of it cultivated by machines. Seventy-two percent of the grain is harvested by combines. Some of the land is too hilly for combines.

"Both yields and living standards are continually increasing," we are told. "Now we have agricultural specialists of our own. The main feature of the people here is brotherhood for all of the people in the country. They want peace for themselves and for all people in the world!"

We then agree on our schedule, which includes a visit to Andizhan, near the border of China in the Fergana Valley. I try to get some figures on fertilizers but I'm afraid the answers are not very clear to me:

Sulphate of ammonia, 1,000,000 tons. (The discussion brings out that this includes some ammonium nitrate and some hydrous ammonia, of which 20,000 tons is applied directly to the soil.)

Superphosphate (18.7%), 800,000 tons. Most of this is produced locally.

In the Vice-Minister's office is a beautiful map of the Republic showing the main irrigation projects. I try some kodachromes but I'm afraid it's too dark.

I take leave of the Vice-Minister and go for a short drive on the main street to take some pictures. I buy an Uzbek painting of Samarkand and an Uzbek cap.

4. Dudkin, Anatolii Sergeevich. Candidate of Technical Science. Director of Navigation Section.

and 97 percent of it cultivated by machines. Seventy-two percent

of the grain is harvested by combines. Some of the land is too

hilly for combines.

"Both yields and living standards are continually increasing."

we are told. "Now we have agricultural specialists of our own. The

main feature of the people here is brotherhood for all of the people

in the country. They want peace for themselves and for all people in

the world!"

We then agree on our schedule, which includes a visit to Andizhan,

near the border of China in the Fergana Valley. I try to get some

figures on fertilizers but I'm afraid the answers are not very clear

to me:

Sulphate of ammonia, 1,000,000 tons. (The discussion brings out

that this includes some ammonium nitrate and some hydrous ammonia, of

which 20,000 tons is applied directly to the soil.)

Superphosphate (18.7%), 800,000 tons. Most of this is produced

locally.

In the Vice-Minister's office is a beautiful map of the Republic

showing the main irrigation projects. I try some Kodachromes but

I'm afraid it's too dark.

I take leave of the Vice-Minister and go for a short drive on

the main street to take some pictures. I buy an Uzbek painting of

Samarkand and an Uzbek cap.

This bit of shopping is quite a job. As our group gets down from the bus, a huge crowd gathers. As many as possible crowd into the stores that I enter. I never selected a painting under less unrelaxed conditions. In the store where I buy the cap, the crowd gives a great cheer as I try it on. These Uzbeks are very simple, kindly people. I think the Russians are pushing them too fast.

We take a short drive through the old part of the city, which is much like southern Asia. We then are back to the hotel for a light lunch.

We then go to a scientific research institute on irrigation and water utilization. This comes under the Ministry of Agriculture for the USSR and carries out work in three republics in Middle Asia.

(Added later: I'm not entirely clear on the relationships among all these agencies. According to Mr. Bulik's notes, this institute is called, Middle Asia State Project Institute for Water Economy and Cotton. Local people use a special word derived from its initials SREDASGIPROVODKHLOPOK.)

We meet several on the staff:

1. Nadzhimov, Fakhri Nadzhimovich. Corresponding Member Uzbek Academy of Agricultural Sciences. Director of Institute.
2. Khusan-Khodzhaev, Zukur Khusainovich. Candidate of Technical Science. Vice Director for Science.
3. Kolodkevich, Dmitrii Pavlovich. Candidate of Technical Science. Director of Laboratory for Automatic and Telemechanics.
4. Dudkin, Anatolii Sergeevich. Candidate of Technical Science. Director of Melioration Section.

and 97 This bit of shopping is quite a job. As our group gets down from the bus, a huge crowd gathers. As many as possible crowd into

the stores that I enter. I never selected a painting under less unrelaxed conditions. In the store where I buy the cap, the crowd gives a great cheer as I try it on. These Uzbeks are very simple, kindly people. I think the Russians are pushing them too fast.

We take a short drive through the old part of the city, which is much like southern Asia. We then are back to the hotel for a

light lunch.

We then go to a scientific research institute on irrigation and

water utilization. This comes under the Ministry of Agriculture for

the USSR and carries out work in three republics in Middle Asia.

(Added later: I'm not entirely clear on the relationships

among all these agencies. According to Mr. Bulik's notes, this

institute is called, Middle Asia State Project Institute for Water

Economy and Cotton. Local people use a special word derived from

its initials SREDASGIPROVOBKHILOK.)

We meet several on the staff:

1. Nadsimov, Fakhr Nadsimovich. Corresponding Member Uzbek Academy of Agricultural Sciences. Director of Institute.

2. Khusan-Khodshayev, Zukur Khusanovich. Candidate of Technical Science. Vice Director for Science.

3. Kolodkevich, Dmitrii Pavlovich. Candidate of Technical Science. Director of Laboratory for Automatic and Telemechanics.

4. Dubkin, Anatolii Sergeevich. Candidate of Technical Science. Director of Melioration Section.

- 1,000 5. Ivanenko, Valerii Lolyevich. Scientific Secretary of Institute.
6. Kaberle, Sergei Ivanovich. Candidate of Technical Science. Director of Hydrotechnical Laboratory.
7. Legostaev, Viktor Mikhailovich. Candidate of Technical Science. Director of Melioration Section of Scientific-Research Institute of Cotton.
8. Korzhavin, Boris Ivanovich. Professor. Vice Minister of Water Economy of the Uzbek SSR.

Mr. Nadzhimov tells us about their work.

They are trying to develop a balanced water system for all of their rivers taken as a whole. The two main ones are the Syr-Darya and the Amur Darya but there are many small tributaries. This scheme also is designed to control erosion and prevent wastes of water. Near Tashkent a new reservoir of 200,000,000 cubic meters will improve irrigation on 132,000 hectares and will permit irrigating 20,000 hectares of new land. This storage costs 4 to 7 rubles for each cubic meter.

He goes on to give us a great many statistics about the size of the many canals in the Fergana Valley and elsewhere.

They have a big scheme under way for irrigating the "Hungry Steppe." They plan to reclaim 610,000 hectares. Two-hundred-five thousand hectares are already reclaimed and irrigated. Three republics are involved in this scheme; 280,000 in the Uzbek Republic; 100,000 hectares in Kazakhstan; and 25,000 hectares in the Tadzhik Republic. It is said these are good soils lacking only water. He then goes on to give us figures on the earth to be moved, etc. including

5. Ivanenko, Valerii Iol'yevich. Scientific Secretary of Institute.
6. Kaberle, Sergei Ivanovich. Candidate of Technical Science. Director of Hydrotechnical Laboratory.
7. Legostaeff, Viktor Mikhailovich. Candidate of Technical Science. Director of Melioration Section of Scientific-Research Institute of Cotton.
8. Kozhavin, Boris Ivanovich. Professor. Vice Minister of Water Economy of the Uzbek SSR.

Mr. Nadshtimov tells us about their work.

They are trying to develop a balanced water system for all of their rivers taken as a whole. The two main ones are the Syr-Darya and the Amur Darya but there are many small tributaries. This scheme also is designed to control erosion and prevent wastes of water. Near Tashkent a new reservoir of 200,000,000 cubic meters will improve irrigation on 132,000 hectares and will permit irrigating 20,000 hectares of new land. This storage costs 4 to 7 rubles for each cubic meter.

He goes on to give us a great many statistics about the size of the many canals in the Fergana Valley and elsewhere. They have a big scheme under way for irrigating the "Hungry Steppe." They plan to reclaim 610,000 hectares. Two-hundred-fifty thousand hectares are already reclaimed and irrigated. Three republics are involved in this scheme; 280,000 in the Uzbek Republic; 100,000 hectares in Kazakhstan; and 25,000 hectares in the Tadzhik Republic. It is said these are good soils lacking only water. He then goes on to give us figures on the earth to be moved, etc. including

1,000,000 cubic meters of concrete, 200 kilometers of drainage and so on in the Uzbek Republic.

They begin with soil surveys and hydro-geological surveys to plan the reclamation. The soils are somewhat salty and must be leached. On cotton they use from 2,000 to 4,000 cubic meters of water besides that required for washing out the salts.

(Added later: After seeing the excessively wide spacing of the open-drainage ditches, I think they are washing the salts down rather than out and will have trouble with salts unless more drainage is installed.)

He says much of this area has a water table at 1.5 to 2.5 meters. This water has a salt content of 2 to 8 gr. per liter, or even higher. He says that in this soil water will rise 4 to 6 meters by capillarity. When the water table is at one meter cotton uses from 7 to 8 thousand cubic meters of water per hectare, and alfalfa 16,000. When it is 2 meters to the ground water they use 2 to 4 thousand cubic meters per hectare on cotton. When it is 3 meters the figure is 1,500 to 2,000. The more water that is used on the surface the less can be taken from the underground. (The salt content of the ground water will increase, I believe.)

Cotton is irrigated from April 20 to September. After harvest they remove the cotton plants and use them for fuel. (This might help the salt balance some, at least it is an important factor in preventing excess salts in the Gezira Scheme.) After the plants are removed,

various types from which the silt can be removed by machines. (Actually, they need more extensive work than they have here for testing scale

1,000,000 cubic meters of concrete, 200 kilometers of drainage and

so on in the Uzbek Republic.

They begin with soil surveys and hydro-geological surveys to

plan the reclamation. The soils are somewhat salty and must be

leached. On cotton they use from 2,000 to 4,000 cubic meters of

water besides that required for washing out the salts.

(Added later: After seeing the excessively wide spacing of the

open-drainage ditches, I think they are washing the salts down rather

than out and will have trouble with salts unless more drainage is

installed.)

He says much of this area has a water table at 1.5 to 2.5 meters.

This water has a salt content of 2 to 8 gr. per liter, or even higher.

He says that in this soil water will rise 4 to 6 meters by capillarity.

When the water table is at one meter cotton uses from 7 to 8 thousand

cubic meters of water per hectare, and alfalfa 16,000. When it is

2 meters to the ground water they use 2 to 4 thousand cubic meters

per hectare on cotton. When it is 3 meters the figure is 1,500 to

2,000. The more water that is used on the surface the less can be

taken from the underground. (The salt content of the ground water will

increase, I believe.)

Cotton is irrigated from April 20 to September. After harvest they

remove the cotton plants and use them for fuel. (This might help the

salt balance some, at least it is an important factor in preventing

excess salts in the Gezira Scheme.) After the plants are removed,

they plow, make bunds, and flood with about 2 to 6 thousand cubic meters per hectare, depending on the salinity. The layer of water is kept to about 20 to 30 centimeters on old land. They plow in the spring and plant cotton.

They say that the irrigation water from the canal contains about .5 grains of salt per liter.

The soils are said to be typical Sierozems. Under long irrigation these change into "meadow" soils, with swampy Solonchak and meadow-Solonchak in the low places.

The works are constructed by three big building trusts financed partly by the USSR, and partly by the Republic. For the Hungry Steppe all the money is said to come from the USSR.

All plans and designs are said to be checked by engineers and scientists of the Amelioration Institute of the Academy of Sciences of the Uzbek Republic.

They design to avoid severe silt problems as much as possible. The river water is quite silty. Their researches show that sprinklers require only one-half as much water as furrows.

Again we have fruit and some more of the wonderful melons.

We go out into the outdoor research area where they have many experimental models of design for both general and specific situations. (K-2575; K-2576) Much of this design work is to develop schemes for taking clear water out of muddy streams for irrigation and for electric power. (K-2577; K-2578) Then they have models of settling basins of various types from which the silt can be removed by machines. (Actually, they need more extensive work than they have here for testing scale

they plow, make bunds, and flood with about 2 to 6 thousand cubic meters per hectare, depending on the salinity. The layer of water is kept to about 20 to 30 centimeters on old land. They plow in the spring and plant cotton.

They say that the irrigation water from the canal contains about 5 grains of salt per liter.

The soils are said to be typical *Sierozems*. Under long irrigation these change into "meadow" soils, with swampy *Solonchaks* and meadow-*Solonchaks* in the low places.

The works are constructed by three big building trusts financed partly by the USSR, and partly by the Republic. For the Hungry Steppe all the money is said to come from the USSR.

All plans and designs are said to be checked by engineers and scientists of the Amelioration Institute of the Academy of Sciences of the Uzbek Republic.

They design to avoid severe silt problems as much as possible. The river water is quite silty. Their researches show that sprinklers require only one-half as much water as furrows.

Again we have fruit and some more of the wonderful melons.

We go out into the outdoor research area where they have many experimental models of design for both general and specific situations. (K-2575; K-2576) Much of this design work is to develop schemes for taking clear water out of muddy streams for irrigation and for electric power. (K-2577; K-2578) Then they have models of settling basins of various types from which the silt can be removed by machines. (Actually, they need more extensive work than they have here for testing scale



K-2575. August 7, 1958. Tashkent. Institute of Water Economy. Model of irrigation set-up to take out silt-laden water. Clear water at left.



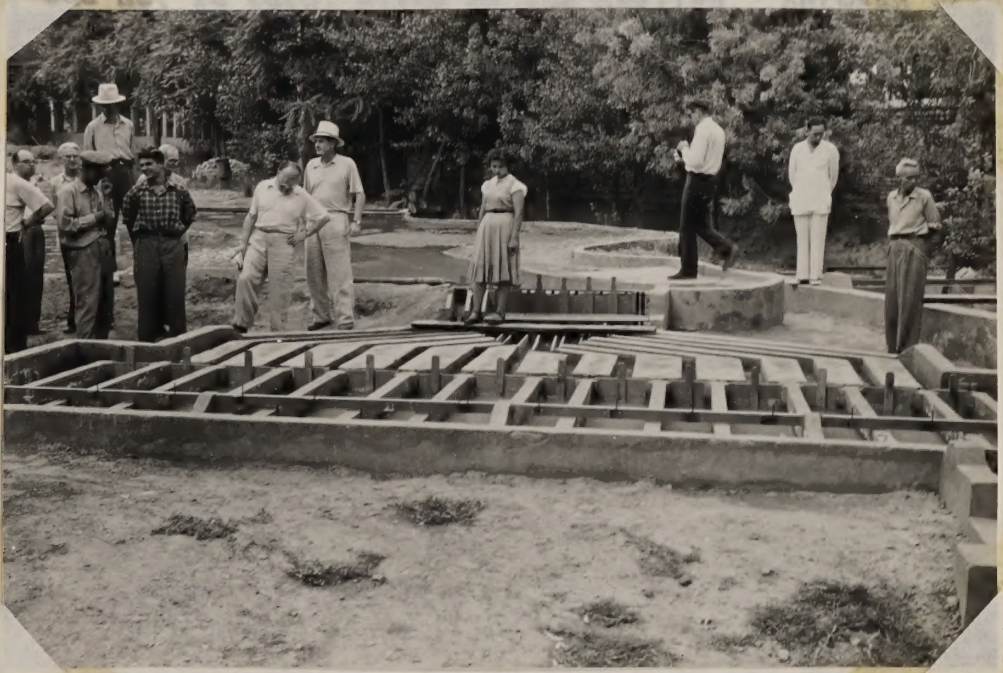
K-2576. August 7, 1958. Tashkent. Experimental layout at Institute of Water Economy.

K-2575. August 7, 1958. Tashkent. Institute of Water
Economy. Model of irrigation set-up to take
out silt-laden water. Clear water at left.

K-2576. August 7, 1958. Tashkent. Experimental layout
at Institute of Water Economy.



K-2577. August 7, 1958. Tashkent. Design at Institute of Water Economy for taking out irrigation water without a dam. Machines continuously remove the "silt" from the canal heads.



K-2578. August 7, 1958. Tashkent. Model to study movement of "silt" for design of settling basin to remove it before the water enters turbines at hydro-electric installation. Institute of Water Economy.

K-2577. August 7, 1958. Tashkent. Design at
Institute of Water Economy for taking
out irrigation water without a dam.
Machines continuously remove the "silt"
from the canal heads.

K-2578. August 7, 1958. Tashkent. Model to
study movement of "silt" for design
of settling basin to remove it before
the water enters turbines at hydro-
electric installation. Institute of
Water Economy.

models of actual systems.)

After much discussion and many pictures we return to the hotel at 6:30.

After dinner some of us are taken to an Uzbek outdoor theater. The play was based on the life of a famous Uzbek writer and philosopher, Alisher Navoi. This was recently written and pictures him as a great friend of the good but downtrodden people. It conforms to present Communist ideology. The acting is good and the costumes are interesting re-creations from the 14th century. The director of the play translates from Uzbek to Russian to my interpreter, and he, in turn, gives me the English. Between acts we have to go into the director's office for completely unnecessary and unwanted refreshments. The play is interesting but too long or else I am too tired. One of the drivers takes me back before it is over and I am in bed as one day changes to another.

We pass a winding natural ravine typical of Sierozem. I am told this soil contains 2 to 2½ percent humus in an A horizon around 20 to 25 centimeters thick.

Tashkent is on the third terrace and we pass over the second terrace of the Chirchik River. These terraces have loessial coverings. My guide says that the Sierozems here have no silica pans.

We pass Yangi Yul.

Along here I see some goats and fat-tailed sheep.

models of actual systems.)

After much discussion and many pictures we return to the

hotel at 6:30.

After dinner some of us are taken to an Uzbek outdoor theater.

The play was based on the life of a famous Uzbek writer and philosopher, Alisher Navoi. This was recently written and pictures

him as a great friend of the good but downtrodden people. It

conforms to present Communist ideology. The acting is good and the

costumes are interesting re-creations from the 14th century.

The director of the play translates from Uzbek to Russian to

my interpreter, and he, in turn, gives me the English. Between acts

we have to go into the director's office for completely unnecessary

and unwanted refreshments. The play is interesting but too long or

else I am too tired.

One of the drivers takes me back before it is over and I am in

bed as one day changes to another.

August 8

We have an early breakfast and leave the hotel in a bus at 8:10 for the Akhun Babaev Collective Farm in the Syr-Darya Rayon of the "Hungry Steppe."

As in the other cities of the Soviet Union, the Tashkent skyline has many scaffolds and cranes for new building.

We are soon in areas growing cotton in large fields. The villages are a mixture of characteristic South Asian mud houses with nearly flat roofs and high mud walls and of whitewashed small homes with metal or tile roofs from the Russian influence. These newer homes have more windows. Part of the new ones resemble farm houses in Ukrainia, even to blue picket fences. In the home plots I see a broomcorn-like millet, corn, fruit trees, grapes, melons, sunflowers, potatoes, and vegetables. There are many trees, especially poplars and willow-like high shrubs, and other unidentified shrubs, along the roads and canals.

We pass a winding natural ravine typical of Sierozem. I am told this soil contains 2 to 2½ percent humus in an A horizon around 20 to 25 centimeters thick.

Tashkent is on the third terrace and we pass over the second terrace of the Chirchik River. These terraces have loessial coverings. My guide says that the Sierozems here have no silica pans.

We pass Yangi Yul.

Along here I see some goats and fat-tailed sheep.

We have an early breakfast and leave the hotel in a bus at 10 for the Akhun Babaev Collective Farm in the Syr-Darya Rayon

of the "Hungry Steppe." As in the other cities of the Soviet Union, the Tashkent skyline

has many scaffolds and cranes for new building. We are soon in areas growing cotton in large fields. The villages

are a mixture of characteristic South Asian mud houses with nearly

flat roofs and high mud walls and of whitewashed small homes with

metal or tile roofs from the Russian influence. These newer homes

have more windows. Part of the new ones resemble farm houses in

Ukraine, even to blue picket fences. In the home plots I see a

broomcorn-like millet, corn, fruit trees, grapes, melons, sunflowers,

potatoes, and vegetables. There are many trees, especially poplars

and willow-like high shrubs, and other unidentified shrubs, along

the roads and canals.

We pass a winding natural ravine typical of Steppes. I am told

this soil contains 2 to 2½ percent humus in an A horizon around 20 to

25 centimeters thick.

Tashkent is on the third terrace and we pass over the second terrace

of the Chirchik River. These terraces have fossilal coverings. My

guide says that the Steppes here have no silica pans.

We pass Yangi Yul.

Along here I see some goats and fat-tailed sheep.

The cut banks along the Chirchik River have vertical walls with cracks as in loess. It is difficult to tell, but I believe that much of this loess has been moved to its present position by the river. As we drive into the newer areas I see some going commercial orchards. Quite a bit of this old terrace has ravines and a mezzo-relief that makes leveling very difficult.

We drop down onto the first terrace and stop for a few minutes at the 55 kilometer stone. (K-2579) Our guides give us few opportunities to photograph the old villages. Apparently they are ashamed of them. Although we were told that all cultivation is by machines I see many women out in the fields taking out weeds with the old fashioned short-handled hoes.

We pass Chinaz. Here the Chirchik joins the Syr-Darya, which we cross. Now the Hungry Steppe begins. The new villages are distinctly Russian, with small cottages, some for two families. I guess that many of the people here are from the Ukraine.

We pass the Syr-Darya Rayon Center and at 11:32 arrive at the farm after a rough ride.

The chairman is an Uzbek named Assadula Ubaidulia-Khadzhaev. The interview takes double translation from Uzbek to Russian to English. The Akhun Babaev Collective Farm was founded in 1942-43. The total area is 3,000 hectares. (Added later: I must have misunderstood this figure. I think it refers only to the total agricultural land as of now.) They started with 200 hectares of

The cut banks along the Chirchik River have vertical walls with cracks as in loess. It is difficult to tell, but I believe that much of this loess has been moved to its present position by the river. As we drive into the newer areas I see some going commercial orchards. Quite a bit of this old terrace has ravines and a mazo-relief that makes leveling very difficult.

We drop down onto the first terrace and stop for a few minutes at the 55 kilometer stone. (K-2579) Our guides give us few opportunities to photograph the old villages. Apparently they are ashamed of them. Although we were told that all cultivation is by machines I see many women out in the fields taking out weeds with the old fashioned short-handled hoes.

We pass Chinas. Here the Chirchik joins the Syr-Darya, which we cross. Now the Hungry Steppe begins. The new villages are distinctly Russian, with small cottages, some for two families. I guess that many of the people here are from the Ukraine.

We pass the Syr-Darya Rayon Center and at 11:32 arrive at the farm after a rough ride. The chairman is an Uzbek named Asadulla Usaidulla-Khadzhaev.

The interview takes double translation from Uzbek to Russian to English. The Akhun Babayev Collective Farm was founded in 1942-43. The total area is 3,000 hectares. (Added later: I must have misunderstood this figure. I think it refers only to the total agricultural land as of now.) They started with 200 hectares of

reclaimed land, of which 125 were cotton and the rest were under food crops, including 25 hectares of rice. Now they have about 1,800 hectares with crops as follows, in hectares:

Cotton 1,200

Alfalfa

Orchards and

Grain sorghum

Silkworm nurseries

(By silkworm

land supporting

Vegetables

There are 630

cotton. (All mec

and 350 women.

K-2579. August 8, 1958. 55 km. west of Tashkent.
Irrigated cotton on first terrace.

Last year they had 3.55

they received 350 rubles per hectare.

Each family has .15 hectares of irrigated land.

The farm has 550 head of cattle including 250 cows.

1,700 sheep, and 150 horses. It is also raising 100 pigs and

donkeys. The average yield per cow is 4,000 kg. of milk. Since

they keep 350 tons of milk for their own use and for a local produc-

tion of 400 tons, it appears that they have enough milk for their own needs.

As required, they delivered 70 tons of milk to the government at 8.5 rubles per kilogram, averaging 100 kg. and more.

As required, they delivered 70 tons of milk to the government at 8.5 rubles per kilogram, averaging 100 kg. and more.

The car took along the Chirchik River some distance with several as in boxes. It is difficult to tell how I believe that much of the time was spent in the house. As we drove by the river. As we drove from the house across the river.

K-2579

conveniently located and a narrow-sidled

We drove down

at the 25th

location in the

of them. Although

I was very much

fashioned short-

the same China

at 2579. August 8, 1958. 25 km. west of Tashkent. Irrigated cotton on first terrace.

distinctly modern, with small cottages, some of the houses.

I guess that many of the people here are from the Russian.

We have the 25th Street Station. The 25th Street Station is the

from after a long ride.

The station is an open-sided station with a platform.

The station is a small station with a platform.

English. The station is a small station with a platform.

The station is a small station with a platform.

undoubtedly this figure. I think it is very much the same.

collected from an old man. They showed me the station.

reclaimed land, of which 125 were cotton and the rest were under food crops, including 25 hectares of rice. Now they have about 1,800 hectares with crops as follows, in hectares:

Cotton 1,200

Alfalfa 450

Orchards and vines 25

Grain sorghum 86

Silkworm nurseries 14

(By silkworm nurseries, he may mean an approximation of the land supporting mulberry trees.)

Vegetables 25

There are 630 families and 1,050 workers, of which 600 work in cotton. (All mechanized?) The chairman says there are 700 workers and 350 women. Women with children do not work on the farm.

Last year they had 3.55 tons per hectare of seed cotton for which they received 350 rubles per centner.

Each family has .15 hectare of irrigated land.

The farm has 550 head of cattle including 200 milk cows,

1,700 sheep, and 150 horses. It is said they have no goats nor donkeys. The average milk per cow is 2,000 liters annually. Since they keep 350 tons of milk for their own use out of a total production of 400 tons, I assume that most farmers do not have private cows. As required, they delivered 30 tons (live weight) of meat to the government at 8.5 rubles per kilogram, averaging all beef and mutton.

reclaimed land, of which 125 were cotton and the rest were under food crops, including 25 hectares of rice. Now they have about 1,800 hectares with crops as follows, in hectares:

Cotton	1,200
Alfalfa	450
Orchards and vines	25
Grain sorghum	86
Silkworm nurseries	14

(By silkworm nurseries, he may mean an approximation of the

land supporting mulberry trees.)

Vegetables	25
------------	----

There are 630 families and 1,050 workers, of which 600 work in cotton. (All mechanized?) The chairman says there are 700 workers and 350 women. Women with children do not work on the farm. Last year they had 3.25 tons per hectare of seed cotton for which they received 350 rubles per centner.

Each family has .15 hectare of irrigated land.

The farm has 250 head of cattle including 200 milk cows, 1,700 sheep, and 150 horses. It is said they have no goats nor donkeys. The average milk per cow is 2,000 liters annually. Since they keep 350 tons of milk for their own use out of a total production of 400 tons, I assume that most farmers do not have private cows. As reported, they delivered 30 tons (live weight) of meat to the government at 8.5 rubles per kilogram, averaging all beef and mutton.

The chairman says that the families represent 34 nationalities. Fertilizers on cotton are said to include 250 kilograms of ammonium sulphate, 350 kilograms of superphosphate, and 6 to 10 tons of farm manure per hectare. He says they put the fertilizer in rows but it is not clear to me whether these are drill

The government of the USSR pays for the reclamation and canals. The farms pay nothing for the water and do not expect to have to. The first is on the 16th of May with 1,000 cubic meters of water; the second is the 10th to the 20th of June with about 1,500 cubic meters; the third is the 15th to the 30th of July with 1,500 meters; and the 4th irrigation is just now being started. The total water varies from 4 to 6 thousand cubic meters per hectare.

At blossoming time they apply part of the fertilizer as a side dressing before irrigation.

Rice growing is permitted only on soils first reclaimed or in wet places but not on the good soils of the Hungry Steppe. The soils are said to be mainly light Sierozems originally.

The chairman says that laborers not working on cotton help near the river they now speak of Meadow-Sierozem as a result of reclaim new land. This year they reclaimed 400 hectares and the irrigation and cropping. Some of these Meadow soils with water tables at one to two meters are nearly black. On the slightly higher land the water table is at 2 to 3 meters. The soils have some salinity.

laborers rest in December, January, and February except for small repair jobs. We are told that before irrigation the water table was at about 2 meters. The chairman says that the present water table now is

The chairman says that the average number of labor-days for all a bit lower just before irrigation as a result of their drainage system. He says that the soils are less salty now than at the start. When irrigation first started, the water table rose and brought up salts; but the drainage system pulled it back down.

This sounds quite good to me, if true. The chairman says that 85 percent of their cotton was of extra quality. The staple length is

Fertilizers on cotton are said to include 250 kilograms of ammonium sulphate, 350 kilograms of superphosphate, and 6 to 10 tons of farm manure per hectare. He says they put the fertilizer in rows but it is not clear to me whether these are drill rows or cotton rows. The cotton is irrigated four times. The first is on the 10th of May with 1,000 cubic meters of water; the second is the 10th to the 20th of June with about 1,500 cubic meters; the third is the 15th to the 30th of July with 1,500 meters; and the 4th irrigation is just now being started. The total water varies from 4 to 6 thousand cubic meters per hectare.

At blossoming time they apply part of the fertilizer as a side dressing before irrigation.

The soils are said to be mainly light Sierozems originally. Near the river they now speak of Meadow-Sierozem as a result of irrigation and cropping. Some of these Meadow soils with water tables at one to two meters are nearly black. On the slightly higher land the water table is at 2 to 3 meters. The soils have some salinity.

We are told that before irrigation the water table was at about 2 meters. The chairman says that the present water table now is a bit lower just before irrigation as a result of their drainage system. He says that the soils are less salty now than at the start. When irrigation first started, the water table rose and brought up salts; but the drainage system pulled it back down.

35 The chairman says that the families represent 14 nationalities from various parts of the USSR. These include 80 families from the Tashkent Oblast. Some Ukrainians came before the Revolution. (I suspect more came during the Revolution than they report.)

by The government of the USSR pays for the reclamation and canals. Farms pay nothing for the water and do not expect to have to. The canals that supply water to several farms are maintained by the government of the Uzbek Republic, while the Ministry of Agriculture of the USSR maintains those systems that serve the three republics. But small canals and drainage systems within farms are maintained by the farms themselves and are part of the farm inventory.

Rice growing is permitted only on soils first reclaimed or in wet places but not on the good soils of the Hungry Steppe.

The chairman says that laborers not working on cotton help reclaim new land. This year they reclaimed 400 hectares and the plan calls for a total of 3,000. (This is the total area so I suppose that some of the crops already listed are not irrigated, or else part of this is on land outside the farm.) He says the cotton laborers rest in December, January, and February except for small repair jobs.

all The chairman says that the average number of labor-days for all the workers on the farm was 300 and he says that each one was worth 26.1 rubles plus 2.5 kilograms of wheat. (The farm must buy this.) This sounds quite good to me, if true. The chairman says that 85 percent of their cotton was of extra quality. The staple length is

percent of their cotton was of extra quality. The staple length is 26.1 rubles plus 2.5 kilograms of wheat. (The farm must buy this.) The workers on the farm was 300 and he says that each one was worth The chairman says that the average number of labor-days for all repair jobs.

laborers rest in December, January, and February except for small else part of this is on land outside the farm.) He says the cotton suppose that some of the crops already listed are not irrigated, or plan calls for a total of 3,000. (This is the total area so I reclaim new land. This year they reclaimed 400 hectares and the The chairman says that laborers not working on cotton help wet places but not on the good soils of the Hungry Steppe.

Rice growing is permitted only on soils first reclaimed or in by the farms themselves and are part of the farm inventory.

But small canals and drainage systems within farms are maintained of the USSR maintains those systems that serve the three republics. government of the Uzbek Republic, while the Ministry of Agriculture canals that supply water to several farms are maintained by the Farms pay nothing for the water and do not expect to have to. The The government of the USSR pays for the reclamation and canals. (I suspect more came during the Revolution than they report.)

the Tashkent Oblast. Some Ukrainians came before the Revolution. from various parts of the USSR. These include 80 families from The chairman says that the families represent 14 nationalities

35 to 36 millimeters. The gross income was 16,875,000 rubles. They deliver the raw cotton to the government and get seeds for planting from the government. They plant 150 kilograms per hectare in check rows 50 x 50 centimeters. Insects are controlled by spraying from planes. They claim to use a systemic spray that lasts 50 days and gives good control of web worms. I fail to understand the name of this material. Two hundred grams of it are dissolved in 100 liters of water.

The cropping system is said to be four years of cotton and three of alfalfa.

The farm now has its own machinery with main items as follows:

- 1 Diesel electric power station
- 40 Tractors
- 15 Trucks
- 12 Cotton seeders
- 1 Silage harvester
- 3 Cars

And of course the other machines to go with them.

We go out to look at the fields. (K-2580) The first one is now being cultivated during its second year. The virgin soil is a saline Sierozem with platy structure in the surface and small accretions of salt, mostly calcium sulphate and sodium chloride. The silt loam surface soil has a pH of 8.0 to 8.7. It is said that Solonetz is relatively uncommon in the Hungry Steppe.

35 to 36 millimeters. The gross income was 16,875,000 rubles. They deliver the raw cotton to the government and get seeds for planting from the government. They plant 150 kilograms per hectare in check rows 50 x 50 centimeters. Insects are controlled by spraying from planes. They claim to use a systemic spray that lasts 50 days and gives good control of web worms. I fail to understand the name of this material. Two hundred grams of it are dissolved in 100 liters of water. The cropping system is said to be four years of cotton and three of alfalfa. The farm now has its own machinery with main items as follows:

1	Diesel electric power station
40	tractors
15	trucks
12	cotton seeders
1	silage harvester
3	cars

And of course the other machines to go with them. We go out to look at the fields. (K-2580) The first one is now being cultivated during its second year. The virgin soil is a saline sterom with platy structure in the surface and small accretions of salt, mostly calcium sulphate and sodium chloride. The silty loam surface soil has a pH of 8.0 to 8.7. It is said that Solonchak is relatively uncommon in the Hungry Steppe.



K-2580. August 8, 1958. West of Tashkent. On Akhun Babaev Collective Farm. First-year cotton after reclamation at left; third-year cotton, right.



K-2581. August 8, 1958. West of Tashkent. Drainage canal on Akhun Babaev Collective Farm.

K-2580. August 8, 1958. West of Tashkent. On Akhun Babayev Collective Farm. First-year cotton after reclamation at left; third-year cotton, right.

K-2581. August 8, 1958. West of Tashkent. Drainage canal on Akhun Babayev Collective Farm.

I look hurriedly at the soil in a pit. It does not appear to me to be a fully developed Sierozem but rather an Alluvial-saline-Sierozem intergrade or Regosol-Sierozem intergrade. But my guides insist that this material was laid down at least 4,000 years ago. Dr. Allaway checks the pH of the irrigated soil at between 7 and 8 and of the irrigation water at 9.

I photograph a drainage canal. (K-2581) These are spaced at 1,000 meters and seem altogether too far apart to me. I fear they may be simply driving the salts down rather than taking them out. Mr. Melnikov agrees that supplemental drainage may be necessary. I think tile would be best.

We stop in a village (K-2582) and the chairman takes us to lunch. This is said to be a typical Uzbek menu which is nearly the reverse of our menus. It starts with champagne, followed by bread and fruit, including nectarines, melons, grapes, watermelons, and apples. Then in order comes soup, green tea from little bowls, and finally mutton and rice.

We talk a bit more about the reclamation program. First the irrigation and drainage canals are put in. Secondly the land is levelled. Thirdly the fields are flooded with 6,000 to 15,000 cubic meters per hectare. This is done twice in the autumn and once or twice in the spring. The cotton stalks are removed and used for fuel. Now they have a new factory in this area for making alcohol out of them.

I look hurriedly at the soil in a pit. It does not appear to me to be a fully developed Stierozem but rather an Alluvial-saline-Stierozem intergrade or Regosol-Stierozem intergrade. But my guides insist that this material was laid down at least 4,000 years ago. Dr. Allaway checks the pH of the irrigated soil at between 7 and 8 and of the irrigation water at 9.

I photograph a drainage canal. (K-2581) These are spaced at 1,000 meters and seem altogether too far apart to me. I fear they may be simply driving the salts down rather than taking them out. Mr. Melnikov agrees that supplemental drainage may be necessary. I think this would be best.

We stop in a village (K-2582) and the chairman takes us to lunch. This is said to be a typical Uzbek menu which is nearly the reverse of our menus. It starts with champagne, followed by bread and fruit, including nectarines, melons, grapes, watermelons, and apples. Then in order comes soup, green tea from little bowls, and finally mutton and rice.

We talk a bit more about the reclamation program. First the irrigation and drainage canals are put in. Secondly the land is levelled. Thirdly the fields are flooded with 6,000 to 15,000 cubic meters per hectare. This is done twice in the autumn and once or twice in the spring. The cotton stalks are removed and used for fuel. Now they have a new factory in this area for making alcohol out of them.

We leave the farm at 2:30 p.m. Just as I leave I am given a beautiful bouquet. In this heat it will be dry by the time we get to the hotel. The construction of house, gear, rough roads, and



engineering.

K-2582. August 8, 1958. West of Tashkent. New house on Akhun Babaev Collective Farm.

They develop and test new machinery. All newly designed machines are tested here. They are recommended for state and collective farms. The institute also gives courses in machinery for farm people and publishes pamphlets for introduction of the new machinery.

We are taken out into the yards and shown some of their exhibits:

1. First of all I see a machine for mixing and granulating manure and mineral fertilizer. It is very small and strikes me as being very silly.

I find nothing at the site. It does not appear to

be a fully developed station but rather an intermediate

station located at a point between the two main

2582

K-2582. August 6, 1958. West of Tashkent. New house
on Akhun Babayev Collective Farm.

We call a bit more about the vegetation. There are

irrigation and drainage canals and the land is

levelled. Usually the fields are planted with wheat

but sometimes. This is done twice in the summer and once in

the spring. The cotton fields are planted and once in the

they have a lot of water. In fact the water is very

We leave the farm at 2:50 p.m. Just as I leave I am presented a beautiful bouquet. In this heat it will be hay by the time I get to the hotel. The combination of heat, dust, rough roads, and this bumpy bus gives my back a real workout. (K-2583; K-2584)

On the way back to Tashkent we stop briefly (I hope) at the Middle-Asian Scientific Research Institute of Mechanization and Electrification of Irrigated Agriculture. We are met by the Director of the Institute, Mr. Irgashev.

In their work they stress cotton growing. This Institute was founded in 1954 on the basis of an experimental station of the Cotton-Growing Institute of the USSR. The present Institute is wholly or partly (I am not clear) under the Academy of Sciences of the Uzbek Republic. The scientific work is organized in 11 laboratories according to field operations, each headed by a masters candidate of engineering.

They develop machines to carry out proved methods of crop management. All newly designed machines are tested here. If satisfactory, they are recommended for state and collective farms. The Institute also gives courses in machinery for farm people and issues propaganda pamphlets for introducing the new machines on farms.

We are taken out into the yards and shown some of their exhibits:

1. First of all I see a machine for mixing and granulating manure and mineral fertilizer. It is very small and strikes me as being very silly.

We leave the farm at 2:50 p.m. Just as I leave I am presented a beautiful bouquet. In this heat it will be hay by the time I get to the hotel. The combination of heat, dust, rough roads, and this

bumpy bus gives my back a real workout. (K-2583; K-2584)

On the way back to Tashkent we stop briefly (I hope) at the

Middle-Asian Scientific Research Institute of Mechanization and Electrification of Irrigated Agriculture. We are met by the Director of the Institute, Mr. Irgashev.

In their work they stress cotton growing. This Institute was

founded in 1924 on the basis of an experimental station of the

Cotton-Growing Institute of the USSR. The present Institute is

wholly or partly (I am not clear) under the Academy of Sciences of

the Uzbek Republic. The scientific work is organized in 11 laboratories

according to field operations, each headed by a masters candidate of

engineering.

They develop machines to carry out proved methods of crop manage-

ment. All newly designed machines are tested here. If satisfactory,

they are recommended for state and collective farms. The Institute also

gives courses in machinery for farm people and issues propaganda

pamphlets for introducing the new machines on farms.

We are taken out into the yards and shown some of their exhibits:

1. First of all I see a machine for mixing and granulating

manure and mineral fertilizer. It is very small and strikes me

as being very silly.



K-2583. August 8, 1958. West of Tashkent. Two travelers.



K-2584. August 8, 1958. West of Tashkent. Village, not yet rebuilt by Russians.

K-2583. August 8, 1958. West of Tashkent. Two
travelers.

K-2584. August 8, 1958. West of Tashkent. Village, not yet rebuilt
by Russians.

2. A manure spreader (Added later: Although there are probably others it turned out that this was the only one that I saw in the Soviet Union.)

3. Broadcast drill for mineral fertilizers.

4. Gang plows

5. Harrows

6. A cotton planter with a fertilizer distribution system that does not seem to be very good.

7. Cotton planter

8. Machine for applying liquid ammonia

9. Cotton pickers

10. Machine for picking unripe cotton bolls

Of course I am no expert on agricultural machinery but many of these seem awkward and clumsy to me.

We leave at 6:00 p.m.

On the way back to the hotel, near the edge of the city, our bus sideswipes a small truck, which in turn, knocks down a horse. We persuade the driver to stop; but he is concerned only with some slight damage to the bus. He soon drives on again without going back to the scene of the accident. Different countries have different rules!

But I am very glad that we do drive on. I have an uneasy stomach, perhaps from too much melon yesterday, to say nothing of being extremely tired from this long bumpy ride, the heat, and the dust. We finally bump along to the hotel at 7:15. Never have I more enjoyed a bath and a hair wash than tonight. We have a leisurely dinner.

2. A manure spreader (Added later: Although there are probably others it turned out that this was the only one that I saw in the Soviet Union.)

3. Broadcast drill for mineral fertilizers.

4. Gang plows

5. Harrows

6. A cotton planter with a fertilizer distribution system

that does not seem to be very good.

7. Cotton planter

8. Machine for applying liquid ammonia

9. Cotton pickers

10. Machine for picking unripe cotton bolls

Of course I am no expert on agricultural machinery but many of

these seem awkward and clumsy to me.

We leave at 6:00 p.m.

On the way back to the hotel, near the edge of the city, our bus

sidswipes a small truck, which in turn, knocks down a horse. We

persuade the driver to stop; but he is concerned only with some slight

damage to the bus. He soon drives on again without going back to the

scene of the accident. Different countries have different rules!

But I am very glad that we do drive on. I have an uneasy stomach,

perhaps from too much melon yesterday, to say nothing of being extremely

tired from this long bumpy ride, the heat, and the dust. We finally

bump along to the hotel at 7:15. Never have I more enjoyed a bath and

a hair wash than tonight. We have a leisurely dinner.

August Something was a bit wrong on this farm today. We saw very few of the people or their villages. The conversation went from Uzbek to Russian to English; yet I feel sure this old Uzbek chairman understood Russian and that I heard him speaking Russian. Then too, I feel that he got a lot of prompting from the officials. One never knows. Nor do I believe that they can remove the salts from the soils properly with open drains at 900 to 1,000 meters. Certainly these should be supplemented, preferably with tile. And I have no doubt that when, as, and if the yields decline they will do so. Yet the cotton looked quite good, except near the margins of the fields and in a few spots with poor stands. I wish I could be free here for a couple of weeks with a car and a driver. If this place was like what I think it was some 50 years ago, the Russians have made great improvements. Tashkent is not so good as Kiev and Moscow, but a very large cut indeed above India, Pakistan, and the Near East, despite the running water in the gutters that people use for nearly all purposes. Yet I feel that the Russians are too impatient and are pushing these people too fast. Of course, I do not expect any political uprising but there could be a moral breakdown. To bed at a decent hour. We cross the canal for irrigation and power that goes through the city of Tashkent. I see some kind of pulse and meadow but most of the land is in cotton.

Something was a bit wrong on this farm today. We saw very few of the people or their villages. The conversation went from Uzbek to Russian to English; yet I feel sure this old Uzbek chair-man understood Russian and that I heard him speaking Russian. Then too, I feel that he got a lot of prompting from the officials. One never knows.

Nor do I believe that they can remove the salts from the soils properly with open drains at 900 to 1,000 meters. Certainly these should be supplemented, preferably with tile. And I have no doubt that when, as, and if the yields decline they will do so. Yet the cotton looked quite good, except near the margins of the fields and in a few spots with poor stands.

I wish I could be free here for a couple of weeks with a car and a driver. If this place was like what I think it was some 50 years ago, the Russians have made great improvements. Tashkent is not so good as Kiev and Moscow, but a very large cut indeed above India, Pakistan, and the Near East, despite the running water in the gutters that people use for nearly all purposes. Yet I feel that the Russians are too impatient and are pushing these people too fast. Of course, I do not expect any political uprising but there could be a moral breakdown.

To bed at a decent hour.

August 9 10:25 we come to the Alkavak Central Agro-Technical

Expe After a good rest last night I believe that I am back to normal. I take a short walk in the cool of the early morning. This promises to be another very hot day. fences and, as I understand, this is

unde We are through breakfast and in the bus at 9:00 a.m. and have to wait awhile for our driver. For some reason Melnikov stays in. We stop at the bank to change money and then drive east to the edge of the city. To the right is the valley of the Chirchik River and beyond I see the high mountains to the south. On the margin of the valley is loess. The normal soil here is Sierozem. In the alluvial valley there are meadow and marshy soils in places but few if any salty soils. It is said here that the Alluvial soils have been irrigated for 150 to 200 years, and a few for 800 years. The irrigation has brought about great changes of the soils toward Chestnut or even Chernozem. Plant physiology

We drive by a collective farm that is mainly cotton, with some orchards and vineyards, especially in the private plots. The farm houses are partly in the old Uzbek style with few windows and partly in the new Russian style. These are better than the strictly city suburbs. We turn north from the main road. It is bordered mostly with mud walls on either side with many trees of various sorts, in the Soviet Union and in other countries than in the United States, including acacia, poplar, apple, plum, and pear. We cross the canal work. For example, a geographic laboratory is not much besides a for irrigation and power that goes through the city of Tashkent. I see some kind of pulse and meadow but most of the land is in cotton.

August 9

After a good rest last night I believe that I am back to normal. I take a short walk in the cool of the early morning. This promises to be another very hot day.

We are through breakfast and in the bus at 9:00 a.m. and have to wait awhile for our driver. For some reason Melnikov stays in. We stop at the bank to change money and then drive east to the edge of the city. To the right is the valley of the Chirchik River and beyond I see the high mountains to the south. On the margin of the valley is loess. The normal soil here is Stierozem. In the alluvial valley there are meadow and marshy soils in places but few if any salty soils. It is said here that the Alluvial soils have been irrigated for 150 to 200 years, and a few for 800 years. The irrigation has brought about great changes of the soils toward Chestnut or even Chernozem.

We drive by a collective farm that is mainly cotton, with some orchards and vineyards, especially in the private plots. The farm houses are partly in the old Uzbek style with few windows and partly in the new Russian style. These are better than the strictly city suburbs. We turn north from the main road. It is bordered mostly with mud walls on either side with many trees of various sorts, including acacia, poplar, apple, plum, and pear. We cross the canal for irrigation and power that goes through the city of Tashkent. I see some kind of pulse and meadow but most of the land is in cotton.

At 10:25 we come to the Akkavak Central Agro-Technical Experimental Station, said to be under the Scientific Research Cotton-Breeding Institute, which is in turn, under the Uzbek Academy of Agricultural Sciences and, as I understand, this is under the Lenin Academy of Agricultural Sciences in Moscow. (This complicated hierarchy may not be correct.)

We first meet in the office of Director Madraimov. He tells us that this station was founded in 1923. The central problem is to develop new agro-technical methods for growing cotton and the other crops associated with cotton, including perennials. They have the following laboratories:^{a/}

1. Soil management, including work on seed beds, etc.
2. Irrigation
3. Agro-chemical
4. Plant physiology
5. Crop rotations

They have 10 postgraduate students besides students of the Agricultural Institute here in Tashkent. The Vice-Director of the station has large-scale experiments on cotton physiology. He shows

^{a/} As translated into English this word is used more broadly in the Soviet Union and in other countries than in the United States. Commonly it includes field trials, greenhouses, and other outside work. For example, a geographic laboratory is not much besides a library and a place to study.

At 10:25 we come to the Akkavsk Central Agro-Technical Experimental Station, said to be under the Scientific Research Cotton-Breeding Institute, which is in turn, under the Uzbek Academy of Agricultural Sciences and, as I understand, this is under the Lenin Academy of Agricultural Sciences in Moscow. (This complicated hierarchy may not be correct.) We first meet in the office of Director Madraimov. He tells us that this station was founded in 1923. The central problem is to develop new agro-technical methods for growing cotton and the other crops associated with cotton, including perennials. They have the following laboratories:

1. Soil management, including work on seed beds, etc.
2. Irrigation
3. Agro-chemical
4. Plant physiology
5. Crop rotations

They have 10 postgraduate students besides students of the Agricultural Institute here in Tashkent. The Vice-Director of the station has large-scale experiments on cotton physiology.

As translated into English this word is used more broadly in the Soviet Union and in other countries than in the United States. Commonly it includes field trials, greenhouses, and other outside work. For example, a geographic laboratory is not much besides a library and a place to study.

Mr. Popov describes the soils of Middle Asia, which are mainly Sierozems. Professor Glinka studied soils here about 50 years ago. The Middle Asian University was started in 1920. As a part of this University a Pedological Institute was organized by Professor Dima. (He is now 86 years old and lives in Moldavia.) Now they have well organized soil surveys of the Uzbek Republic. He shows us a soil map of the Republic made in 1932 at a scale of 1:420,000 that has 48 items in the legend.

A great variation in soils is due to mountains of 3,500 meters and deserts of only 50 meters above sea level. The station itself is concerned with the soils of the river valleys and deserts. They have made or are making soil maps of all areas suitable for cotton at scales of 1:25,000 or 1:50,000. Each state and collective farm has or will have a soil map at a scale of 1:10,000. They also prepare generalized soil maps of each oblast and each rayon. Most of this soil mapping was completed by 1938.

I suggest that I should very much like to have copies of these as examples. (Added later: They do make me a copy of an example of a general map at 1:50,000, but not of the detailed maps.) He shows me one of the area served by one of the machine and tractor stations at 1:50,000. They also make agro-technical maps by interpretation from the soil map. He shows me one of the Tashkent Oblast at 1:50,000 that has 25 different kinds of soil in the legend, together with recommendations for fertilizers and other practices. The detailed units in the soil classification are grouped somewhat for making

units in the soil classification are grouped somewhat for making recommendations for fertilizers and other practices. The detailed that has 25 different kinds of soil in the legend, together with from the soil map. He shows me one of the Tashkent Oblast at 1:50,000 at 1:50,000. They also make agro-technical maps by interpretation me one of the area served by one of the machine and tractor stations a general map at 1:50,000, but not of the detailed maps.) He shows as examples. (Added later: They do make me a copy of an example of I suggest that I should very much like to have copies of these mapping was completed by 1938.

Generalized soil maps of each oblast and each rayon. Most of this soil has or will have a soil map at a scale of 1:10,000. They also prepare at scales of 1:25,000 or 1:50,000. Each state and collective farm have made or are making soil maps of all areas suitable for cotton is concerned with the soils of the river valleys and deserts. They and deserts of only 50 meters above sea level. The station itself A great variation in soils is due to mountains of 3,500 meters 48 items in the legend.

map of the Republic made in 1932 at a scale of 1:420,000 that has organized soil surveys of the Uzbek Republic. He shows us a soil (He is now 86 years old and lives in Moldavia.) Now they have well University a Pedological Institute was organized by Professor Dimo. The Middle Asian University was started in 1920. As a part of this Sterozema. Professor Glinka studied soils here about 50 years ago. Mr. Popov describes the soils of Middle Asia, which are mainly

recommendations to state and collective farms. He has a soil map of this station at 1:5,000.

Then he shows me a series of maps for a collective farm. The basic soil map has 7 mapping units. Then a supplemental map shows available phosphorus in three units. These maps do not look nearly so good to me as the ones at Minsk. But these are mostly pre-war and those at Minsk mostly post-war. These detailed maps appear to omit places not suitable to irrigation and also areas with buildings. It is clear, too, that there is little or no cooperation between the soil scientists and the civil engineers making roads and other structures; but he insists that all the reclamation engineers can read soil maps. The soil maps have legends that show the principal features of the named soil units. Derived maps are also made to show the depth of the "humus" layer.

We go to the plant physiology laboratory where they are trying to get varieties in which the bolls will open as early as possible. Although the summers are warm to hot, the season is a bit short. (Rank in this Institute, as well as in the others we have visited, seems to be indicated by the massiveness and splendor of the desk set and lamp. This man has a very nice electric lamp and it seems to serve its primary purpose even though there seems to be no way to plug it into a socket!) plant.

Here they have experiments where they pick off the unripe bolls for heating and get good results with fair yields from those 17 days old.

recommendations to state and collective farms. He has a soil map of this station at 1:5,000.

Then he shows me a series of maps for a collective farm. The basic soil map has 7 mapping units. Then a supplemental map shows available phosphorus in three units. These maps do not look nearly so good to me as the ones at Minsk. But these are mostly pre-war and those at Minsk mostly post-war. These detailed maps appear to omit places not suitable for irrigation and also areas with buildings. It is clear, too, that there is little or no cooperation between the soil scientists and the civil engineers making roads and other structures; but he insists that all the reclamation engineers can read soil maps. The soil maps have legends that show the principal features of the named soil units. Derived maps are also made to show the depth of the "humus" layer.

We go to the plant physiology laboratory where they are trying to get varieties in which the bolts will open as early as possible. Although the summers are warm to hot, the season is a bit short.

(Rank in this Institute, as well as in the others we have visited, seems to be indicated by the massiveness and splendor of the desk set and lamp. This man has a very nice electric lamp and it seems to serve its primary purpose even though there seems to be no way to plug it into a socket!)

The late cotton bolls are picked and placed in a warm oven at 35°C. Later they open and useful fiber is obtained. The treatment is said to increase the amount of fiber in a 17-day old boll by 60 percent.

They also study the effect of water and fertilizer on the quality of cotton fiber. They are trying to understand the environmental conditions that favor the formation of flowers, buds, and bolls.

We glance in the agro-chemical laboratory where they make analyses of soils and plants. The standard methods are published by this Institute but another laboratory in Tashkent makes the analyses for the interpretation of soil maps.

Out in the courtyard we are shown many pots, cased to control temperature, in which cotton is grown under different conditions of moisture and nutrition. (K-2585) We see a little muslin house in which a Chinese graduate student has rigged up an artificial rainmaker in order to study cotton growth under very humid conditions like those in parts of his country. He finds that the crop does well if fairly widely spaced. (K-2586)

These plants in the pots out in the sun are fertilized with all of the nutrients. They tried washing out the nitrogen when the first flowers form and found that the plants grew from nitrogen translocated within the plant.

Here they have experiments where they pick off the unripe bolls for heating and get good results with fair yields from those 17 days old.

Here they have experiments where they pick off the unripe bolls for heating and get good results with fair yields from those 17 days old.

These plants in the pots out in the sun are fertilized with all of the nutrients. They tried washing out the nitrogen when the first flowers form and found that the plants grew from nitrogen translocated within the plant.

in parts of his country. He finds that the crop does well if fairly in order to study cotton growth under very humid conditions like those which a Chinese graduate student has rigged up an artificial rainmaker moisture and nutrition. (K-2585) We see a little muslin house in temperature, in which cotton is grown under different conditions of Out in the courtyard we are shown many pots, cased to control the interpretation of soil maps.

Institute but another laboratory in Tashkent makes the analyses for of soils and plants. The standard methods are published by this We glance in the agro-chemical laboratory where they make analyses mental conditions that favor the formation of flowers, buds, and bolls. quality of cotton fiber. They are trying to understand the environ- They also study the effect of water and fertilizer on the boll by 60 percent.

treatment is said to increase the amount of fiber in a 17-day old at 35°C. Later they open and useful fiber is obtained. The The late cotton bolls are picked and placed in a warm oven



K-2585. August 9, 1958. Tashkent. Akkavak Central Agro-Technical Station layout of pots to study effects of fertilizer and other treatments.



K-2586. August 9, 1958. Tashkent. Akkavak Central Agro-Technical Station. Studying cotton plants under rain. If plants are not too leafy rain does not harm them.

K-2585. August 9, 1958. Tashkent. Akhvak Central
Agro-Technical Station layout of pots to
study effects of fertilizer and other treat-
ments.

K-2586. August 9, 1958. Tashkent. Akhvak Central
Agro-Technical Station. Studying cotton plants
under rain. If plants are not too leafy rain
does not harm them.

I see a group of plants pruned to a single boll that are said to be growing with different amounts of water - 40 percent, 70 percent, 90 percent, and 100 percent of field capacity. The surface of the pots is covered with cotton to prevent evaporation. With the pruning the plants have uniform temperature. Under this situation the more nitrogen applied, the more rapidly the boll ripens. Thus in practice, when nitrogen seems to slow down ripening the effect is indirect through causing a large plant that reduces light and temperature and increases humidity.

In another series of pots they are studying root nutrition with nitrogen so that they may know the effect of nitrogen at all stages of growth and figure out the best time for application. Here they have selected four stages: (1) When leaves first appear, (2) when two full leaves appear, (3) when four leaves appear, and (4) at the start of flowering. Their experiments show that cotton requires high amounts of nitrogen from the start to the formation of buds, at least higher than they had formerly thought. Low nitrogen lengthens the growth period; and nitrogen application hastens flowering. They recommend to farmers that they apply nitrogen 3 times: (1) immediately after planting, (2) at budding, and (3) at flowering time.

They suggest that one-half of the phosphorus be applied at planting time and one-fourth of it at each of the other two stages.

They show us a set-up for studying the effects of fertilizers and nutrient balance on transpiration. Phosphorus-deficient soils have a high coefficient. They measure the transpiration by taking

I see a group of plants pruned to a single boll that are said to be growing with different amounts of water - 40 percent, 70 percent, 90 percent, and 100 percent of field capacity. The surface of the pots is covered with cotton to prevent evaporation. With the pruning the plants have uniform temperature. Under this situation the more nitrogen applied, the more rapidly the boll ripens. Thus in practice, when nitrogen seems to slow down ripening the effect is indirect through causing a large plant that reduces light and temperature and increases humidity.

In another series of pots they are studying root nutrition with nitrogen so that they may know the effect of nitrogen at all stages of growth and figure out the best time for application. Here they have selected four stages: (1) When leaves first appear, (2) when two full leaves appear, (3) when four leaves appear, and (4) at the start of flowering. Their experiments show that cotton requires high amounts of nitrogen from the start to the formation of buds, at least higher than they had formerly thought. Low nitrogen lengthens the growth period; and nitrogen application hastens flowering. They recommend to farmers that they apply nitrogen 3 times: (1) immediately after planting, (2) at budding, and (3) at flowering time.

They suggest that one-half of the phosphorus be applied at planting time and one-fourth of it at each of the other two stages. They show us a set-up for studying the effects of fertilizers and nutrient balance on transpiration. Phosphorus-deficient soils have a high coefficient. They measure the transpiration by taking

the weights of the plants and the dry matter. They apply measured amounts of water to the pots. The soil in the pots is mostly covered with paper or cotton. This experimental technique is unconvincing and is dated a bit before Briggs and Shantz.

It is very hot here in the sun.

We go out to the fields where there is experimental irrigation of cotton with furrows between alternate rows. Formerly the rows were 70 centimeters apart but now they prefer 50 or 60. If they irrigate with a furrow between every row at 50 centimeters spacing, about 60 percent of the field has compact soil. With furrows between alternate rows less cultivation is required. Yields are about the same but labor is reduced.

I look at an ordinary Sierozem in a very gently sloping field of irrigated alfalfa at this Akkavak Central Agro-technical Station.

A _P	0 - 11½"	Dark grayish-brown (10YR 4/2, moist; 10YR 6/2, dry) silt loam. Digs out in irregular small and coarse clods. These are friable with some difficulty.
B	15 - 46"	
B ₁ or A ₃₁	11½ - 19"	Brown (10YR 4/3) heavy silt loam. Moderate prismatic structure that falls irregularly into hard angular and subangular blocky.
C	46 - 60"	The peds are now hard and difficult to crush.
B ₂ or A ₃₂	19 - 33"	Lighter brown (10YR 5/3) heavy silt loam (dry 7/3) with some light gray mottling. Angular and subangular medium blocky. The soil is hard but more easily crushed than that in B ₁ .
B _{3ca} or C _{ca}	33 - 37"	Like above but with some concretions of calcium carbonate.

the weights of the plants and the dry matter. They apply measured amounts of water to the pots. The soil in the pots is mostly covered with paper or cotton. This experimental technique is unconvincing and is dated a bit before Briggs and Shantz.

It is very hot here in the sun.

We go out to the fields where there is experimental irrigation of cotton with furrows between alternate rows. Formerly the rows were 70 centimeters apart but now they prefer 50 or 60. If they irrigate with a furrow between every row at 50 centimeters spacing, about 60 percent of the field has compact soil. With furrows between alternate rows less cultivation is required. Yields are about the same but labor is reduced.

I look at an ordinary Stierzen in a very gently sloping field of irrigated alfalfa at this Akkavak Central Agro-technical Station.

A_p 0 - 11" Dark grayish-brown (10YR 4/2, moist; 10YR 6/2, dry) silt loam. Digs out in irregular small and coarse clods. These are friable with some difficulty.

A₃₁ B₁ or 11" - 19" Brown (10YR 4/3) heavy silt loam. Moderate prismatic structure that falls irregularly into hard angular and subangular blocky. The beds are now hard and difficult to crush.

A₃₂ B₂ or 19 - 33" Lighter brown (10YR 5/3) heavy silt loam (dry 7/3) with some light gray mottling. Angular and subangular medium blocky. The soil is hard but more easily crushed than that in B₁.

B_{3ca} or 33 - 37" Like above but with some concretions of calcium carbonate.

C_{ca}

C 37 - 57" Brown (10YR 5/3, moist; 10YR 7/3, dry) heavy silt loam. Some white nodules; weakly coarse prismatic; digs out as moderate subangular blocky. These peds are fairly firm to hard.

This soil is calcareous throughout. Probably the landscape is an ancient terrace with a surface of alluvium from loess or loess itself. (K-2587)

I go further down the slope in the blistering sun and look at another pit. The soil is about the same except for a somewhat stronger B and more clear "eyes" of calcium carbonate in the C.

Then I go still further down this gentle slope and into a third pit. I am told that the surface soil has had considerable addition through erosion from above, but I cannot see this, although there are somewhat less carbonates.

A _p	0 - 11"	Brown (10YR 4/2, moist; 6/2, dry) cloddy silt loam.
A-B	11 - 15"	Transitional
B	15 - 46"	Brown (10YR 4/3) silty clay loam. Moderate, medium prismatic that falls into hard medium angular blocky. (Dry, uncrushed peds are pinkish-gray (10YR 6/3).
C	46 - 60"+	Brown (10YR 4/3) silt loam. Massive, but digs out in easily friable pieces.

This profile is calcareous throughout but lacks prominent "eyes." Probably all these soils are from loess, but it may have been reworked a bit with water. The better crops on the last two profiles are related, I believe, to moisture rather than to erosion as my local

Agro-Technical Station, "Fertilizer" plots. Looking from no fertilizer plot to one at left with mineral fertilizer.

related, I believe, to moisture rather than to erosion as my local a bit with water. The better crops on the last two profiles are Probably all these soils are from loess, but it may have been reworked This profile is calcareous throughout but lacks prominent "eyes."

C	46 - 60"+	Brown (10YR 4/3) silt loam. Massive, but digs out in easily friable pieces.
B	15 - 46"	unwashed beds are pinkish-gray (10YR 6/3). into hard medium angular blocky. (dry, Moderate, medium prismatic that falls Brown (10YR 4/3) silty clay loam.
A-B	11 - 15"	Transitional
A _p	0 - 11"	Brown (10YR 4/2, moist; 6/2, dry) cloddy silt loam.

somewhat less carbonates. through erosion from above, but I cannot see this, although there are pit. I am told that the surface soil has had considerable addition Then I go still further down this gentle slope and into a third stronger B and more clear "eyes" of calcium carbonate in the C. another pit. The soil is about the same except for a somewhat I go further down the slope in the blistering sun and look at itself. (K-3587) is an ancient terrace with a surface of alluvium from loess or loess This soil is calcareous throughout. Probably the landscape

C 35 - 57" Brown (10YR 5/3, moist; 10YR 7/3, dry) heavy silt loam. Some white nodules; weakly coarse prismatic; digs out as moderate subangular blocky. These beds are fairly firm to hard.



K-2587. August 9, 1958. Tashkent. Akkavak Central Agro-Technical Station. Sierozem soil (described). Dr. Cline in pit.



K-2588. August 9, 1958. Tashkent. Akkavak Central Agro-Technical Station. "Classical" cotton plots. Looking from no fertilizer plot to one at left with mineral fertilizer.

K-2587. August 9, 1958. Tashkent. Akhvak Central Agro-Technical
Station. Sterile soil (described). Dr. Cline in pit.

K-2588. August 9, 1958. Tashkent. Akhvak Central
Agro-Technical Station. "Classical" cotton
plots. Looking from no fertilizer plot to one
at left with mineral fertilizer.

guides suggest. Laboratory data show increasing clay in the position of the B horizon as one goes down the slope. But no very good conclusions can be drawn since the area had some smoothing by machines before plowing and preparation for irrigation. brings us into his office where we sit around a table loads. These three soil pits are like ovens today. Dr. Cline works very hard with me; Dr. Allaway takes a quick look; but the others remain in the shade! leaving similar climatic conditions. He says their After Dr. Cline and I finish with the pits, the group assembles again to look at some old experiments on soil fertility with cotton. laid out in the classical manner: different crops under study.

1. 30 tons of manure per hectare irritated and disappointed
28.4 centners of seed cotton
that the United States Crops Mission, although in Tashkent, did not
2. Cotton seed cake at 2.5 tons per hectare
29.3 centners of seed cotton. It was a great pity. I
- supposed 3. No fertilizer or manure collections in the world and we
15.3 centners of seed cotton
are soil scientists with less than two hours!)
4. Mineral fertilizer, including 150 kg. of N, 100 kg. P_2O_5
and 50 kg. of K_2O every year. plants briefly:
31.6 centners of seed cotton

1. Industrial crops, especially cotton, but also kenaf and
These experiments are of doubtful accuracy. (K-2588) They are
jute and such oil-bearing crops as peanuts, sesame, sunflowers, and
without proper replications and randomization. Experimental error
seed flax. They study also tau-saghyz for rubber. They have 4,800
must be high,
varieties of cotton.

My guide tells me that the carbon-nitrogen ratios run from
2. Field crops, including wheat, rye, oats, millet, barley,
7.0 to 9.9.
corn (350 varieties), grain sorghums, legumes, pulses, peas, soybeans,
and others.
At 2:00 p.m. we go to the usual lunch with toasts and all the
rest.

guides suggest. Laboratory data show increasing clay in the position of the B horizon as one goes down the slope. But no very good conclusions can be drawn since the area had some smoothing by machines before plowing and preparation for irrigation.

These three soil pits are like ovens today. Dr. Cline works very hard with me; Dr. Allaway takes a quick look; but the others remain in the shade!

After Dr. Cline and I finish with the pits, the group assembles again to look at some old experiments on soil fertility with cotton laid out in the classical manner:

1. 30 tons of manure per hectare
28.4 centners of seed cotton
2. Cotton seed cake at 2.5 tons per hectare
29.3 centners of seed cotton
3. No fertilizer or manure
12.3 centners of seed cotton
4. Mineral fertilizer, including 150 kg. of N, 100 kg. P_2O_5 and 50 kg. of K_2O every year.
31.6 centners of seed cotton

These experiments are of doubtful accuracy. (K-2588) They are without proper replications and randomization. Experimental error must be high.

My guide tells me that the carbon-nitrogen ratios run from 7.0 to 9.9.

At 2:00 p.m. we go to the usual lunch with toasts and all the

rest.

At 3:30 we leave in the bus for another station (K-2589; K-2590), which we reach at 4:25. This is the Middle Asian Scientific Research Institute on Plant Breeding of the USSR. We are met by Director Vysotski.

He brings us into his office where we sit around a table loaded with fruits. The station is 30 years old. It has several laboratories for studying the various crops of Middle Asia and in other parts of Asia having similar climatic conditions. He says their primary task is to collect as many varieties as possible and then test them for usefulness, including also disease resistance. They now have 53,000 varieties of different crops under study.

(Apparently the staff here is a bit irritated and disappointed that the United States Crops Mission, although in Tashkent, did not visit them as these people had expected. It was a great pity. I suppose this is one of the biggest collections in the world and we are soil scientists with less than two hours!)

He tells us some of the groups of plants briefly:

1. Industrial crops, especially cotton, but also kenaf and jute and such oil-bearing crops as peanuts, sesame, sunflowers, and seed flax. They study also tau-saghyz for rubber. They have 4,800 varieties of cotton.

2. Field crops, including wheat, rye, oats, millet, barley, corn (550 varieties), grain sorghums, legumes, pulses, peas, soybeans, and others.

K-2590. August 9, 1958. East of Tashkent. Looking from cotton field toward the mountains.

At 3:30 we leave in the bus for another station (K-2289; K-2290), which we reach at 4:25. This is the Middle Asian Scientific Research Institute on Plant Breeding of the USSR. We are met by Director Vysotski. He brings us into his office where we sit around a table loaded with fruits. The station is 30 years old. It has several laboratories for studying the various crops of Middle Asia and in other parts of Asia having similar climatic conditions. He says their primary task is to collect as many varieties as possible and then test them for usefulness, including also disease resistance. They now have 53,000 varieties of different crops under study. (Apparently the staff here is a bit irritated and disappointed that the United States Crops Mission, although in Tashkent, did not visit them as these people had expected. It was a great pity. I suppose this is one of the biggest collections in the world and we are soil scientists with less than two hours!) He tells us some of the groups of plants briefly:

1. Industrial crops, especially cotton, but also kenaf and jute and such oil-bearing crops as peanuts, sesame, sunflowers, and seed flax. They study also caucaghyz for rubber. They have 4,800 varieties of cotton.
2. Field crops, including wheat, rye, oats, millet, barley, corn (550 varieties), grain sorghums, legumes, pulses, peas, soybeans, and others.



K-2589. August 9, 1958. East of Tashkent. A partially excavated old "watching hill."



K-2590. August 9, 1958. East of Tashkent. Looking from cotton field toward the mountains.

K-2589. August 9, 1958. East of Tashkent. A partially excavated
old "watching hill."

K-2590. August 9, 1958. East of Tashkent. Looking from cotton
field toward the mountains.

3. Melons, potatoes, and vegetables. Tomatoes have the first place here followed by eggplant, carrots, and cabbage. They try many others. They have over 1,000 varieties of potatoes and are trying to develop a scheme for getting two crops in one year. They have many watermelons, squash, pumpkins, and melons. Some varieties of melons can be stored all winter. (A few crops drop out from language difficulties.)

K-2591.
4. Fruits, including small fruits and grapes. They have a "luffa": it looks like a gourd and is used as a bath sponge.

A second objective of the station is to furnish varieties for the selection programs of other stations in the USSR.

They have found many new and previously undescribed varieties of fruits, vegetables, and grains in these Middle Asian Mountains. They have been able to grow a perennial wheat - a cross between wheat and couch grass. In practice, however, this is not a perennial. It gives a good crop the first year but not after that. It does not do well here.

We then take a quick walk around parts of the station. We pass through a huge vineyard with hundreds and hundreds of both wine and table varieties. The plants are very well cared for. (K-2591)

Then we go to see the melons under irrigation. (K-2592) The furrows are somewhat over 2 meters apart and there are literally hundreds of square test plots that are very well tended. (K-2593) We try a few of the melons but I'm a bit cagey after having had too many the other day.

any the other day.

le try a few of the melons but I'm a bit cagey after having had too
hundreds of square test plots that are very well tended. (K-2593)
trows are somewhat over 2 meters apart and there are literally
Then we go to see the melons under irrigation. (K-2592) The
able varieties. The plants are very well cared for. (K-2591)
through a huge vineyard with hundreds and hundreds of both wine and
We then take a quick walk around parts of the station. We pass
o well here.

It gives a good crop the first year but not after that. It does not
heat and couch grass. In practice, however, this is not a perennial.
they have been able to grow a perennial wheat - a cross between
fruits, vegetables, and grains in these Middle Asian Mountains.
They have found many new and previously undescribed varieties
the selection programs of other stations in the USSR.

A second objective of the station is to furnish varieties for
luffa": it looks like a gourd and is used as a bath sponge.

4. Fruits, including small fruits and grapes. They have a
language difficulties.)

of melons can be stored all winter. (A few crops drop out from
ave many watermelons, squash, pumpkins, and melons. Some varieties
trying to develop a scheme for getting two crops in one year. They
any others. They have over 1,000 varieties of potatoes and are
place here followed by eggplant, carrots, and cabbage. They try
3. Melons, potatoes, and vegetables. Tomatoes have the first



K-2591. August 9, 1958. Near Tashkent. Middle-Asian Scientific Research Institute on Plant Breeding of the USSR. Grapes.



K-2592. August 9, 1958. Near Tashkent. A group of women at the Institute.

K-2591. August 9, 1958. Near Tashkent. Middle-Asian Scientific
Research Institute on Plant Breeding of the USSR. Grapes.

K-2592. August 9, 1958. Near Tashkent. A group of women
at the Institute.

We take just a quick look at some of the nicest ones I've seen in the USSR. One could spend many days here. I've never seen so many well-cared-for plants in one experimental station.



K-2593. August 9, 1958. Near Tashkent. Middle-Asian Research Institute on Plant Breeding of the USSR. Varieties of melons. Tall corn in background.

K-2593. August 9, 1958. Near Tashkent. Middle-Asian Research
Institute on Plant Breeding of the USSR. Varieties of
melons. Tall corn in background.

We take just a quick look at some of the nicest corn I've seen in the USSR. One could spend many days here. I've never seen so many well-cared-for plants in one experiment station. This work must be very valuable indeed to this part of the Soviet Union.

We leave for Tashkent in the same bumpy bus and are back at the hotel at 7:15 and have dinner at 8:00.

This has not been a very productive day. Everything was done in too big a hurry. Little was completely explained or understood. The experiments at Akkavak do not have proper controls for modern statistical analysis.

After a small dinner that takes a long time I walk around the square and prepare for bed.

As we leave Tashkent I note the low level of water in the wide bedded bed of this Chirchik River. We fly over green fields toward the mountains. Within 5 minutes we are over dry billowy land with strong north-south wind that is used for cereals and rough pasture. Some places seem to be nearly barren. Irregular strips along the water courses are green from irrigation. A few of the dry stubble fields have been burned. By 10 minutes out most of the land is too rough from dissection for crops; and in 3 more minutes we are over strongly dissected and rugged hills. To the northeast I see higher peaks with a bit of snow. Then we pass over a small valley with a stream, a road, a railway, and some cereal fields. The stream is well braided. The fields and villages are on an old first terrace that had been well braided. The little valley is very

We take just a quick look at some of the nicest corn I've seen in the USSR. One could spend many days here. I've never seen so many well-cared-for plants in one experiment station. This work must be very valuable indeed to this part of the Soviet Union.

We leave for Tashkent in the same bumpy bus and are back at the hotel at 7:15 and have dinner at 8:00. This has not been a very productive day. Everything was done in too big a hurry. Little was completely explained or understood. The experiments at Akkavak do not have proper controls for modern statistical analysis. After a small dinner that takes a long time I walk around the square and prepare for bed.

August 10

At 6:30 this morning it is a bit cloudy. I had been hoping very much for a clear day to fly over the mountains to Andizhan in the Fergana Valley. I have a bit of trouble to get boiling water (equals "kipitok," about the most important word in the Russian language.) But persistence finally won out and I have my tea.

I pack nearly everything, have breakfast, and take a walk in the town. (K-2595; K-2596) I am back in the hotel with just time for a haircut. Then to the airport.

We reach the airport at 11:00 a.m. and the wheels are up for Andizhan at 11:52. Unhappily it is hazy and a bit cloudy. The air is warm and dusty but not quite hot. As we leave Tashkent I note the low level of water in the wide braided bed of this Chirchik River. We fly over green fields toward the mountains. Within 5 minutes we are over dry billowy land with strong mezzo-relief that is used for cereals and rough pasture. Some places seem to be nearly barren. Irregular strips along the water courses are green from irrigation. A few of the dry stubble fields have been burned. By 10 minutes out most of the land is too rough from dissection for crops; and in 3 more minutes we are over strongly dissected and rugged hills. To the northeast I see higher peaks with a bit of snow. Then we pass over a small valley with a stream, a road, a railway, and some cereal fields. The stream is well braided. The fields and villages are on an old first terrace that had been well braided. The little valley is very

August 10

At 6:30 this morning it is a bit cloudy. I had been hoping very much for a clear day to fly over the mountains to Andizhan in the Fergana Valley. I have a bit of trouble to get boiling water (eduala "kipitok," about the most important word in the Russian language.) But persistence finally won out and I have my

tea.

I pack nearly everything, have breakfast, and take a walk in the town. (K-2595; K-2596) I am back in the hotel with just time for a haircut. Then to the airport.

We reach the airport at 11:00 a.m. and the wheels are up for Andizhan at 11:22. Unhappily it is hazy and a bit cloudy. The air is warm and dusty but not quite hot. As we leave Tashkent I note the low level of water in the wide braided bed of this Chirchik River. We fly over green fields toward the mountains. Within 5 minutes we are over dry billowy land with strong meso-relief that is used for cereals and rough pasture. Some places seem to be nearly barren. Irregular strips along the water courses are green from irrigation. A few of the dry stubble fields have been burned. By 10 minutes out most of the land is too rough from dissection for crops; and in 3 more minutes we are over strongly dissected and rugged hills. To the northeast I see higher peaks with a bit of snow. Then we pass over a small valley with a stream, a road, a railway, and some cereal fields. The stream is well braided. The fields and villages are on an old first terrace that had been well braided. The little valley is very



K-2595. August 10, 1958. Tashkent. A courtyard as it looks from the street with the door open.



K-2596. August 10, 1958. Tashkent. An ordinary street in a good residential section.

K-2595. August 10, 1958. Tashkent. A courtyard as it looks
from the street with the door open.

K-2596. August 10, 1958. Tashkent. An ordinary street in a
good residential section.

narrow up to one-half mile wide where we cross it. Its tributaries have a few green spots along them in the well-dissected foot hills. Even in these I see a few steeply sloping grain fields in favored places.

We pass over the mountains. Most of the soil is reddish-brown with a cover of scattered shrubs or trees that resemble junipers. At 23 minutes out the mountains are strongly dissected and have sharp rocky peaks. Again to the northeast I see another green valley with crops, trees, and villages. It bends to the south and we cross it. We pass over jagged, gray and pinkish-brown low mountains that appear to be barren except for a few tiny favored places. I see a poor road but no animals or people. A few minutes later we cross another drainage-way that has no green along it.

At 30 minutes from Tashkent we come to the edge of the Fergana Valley and cross the Syr-Darya River, here a winding, mature stream with some braiding. This valley is about 150 kilometers wide and 300 kilometers long. The pattern from the ground varies from nearly regular irrigated fields to highly mottled ones. Some parts are nearly barren, probably partly from salt and partly from irregular relief. Certainly some of the fields are too salty for crops. Out further in the valley the villages are quite numerous.

Then at 38 minutes out I see to the northeast a large nearly barren plain that appears to be salty. One of our hosts says that it is Solonchak.

narrow up to one-half mile wide where we cross it. Its tributaries have a few green spots along them in the well-dissected foot hills. Even in these I see a few steeply sloping grain fields in favored places.

We pass over the mountains. Most of the soil is reddish-brown with a cover of scattered shrubs or trees that resemble junipers. At 23 minutes out the mountains are strongly dissected and have sharp rocky peaks. Again to the northeast I see another green valley with crops, trees, and villages. It bends to the south and we cross it. We pass over jagged, gray and pinkish-brown low mountains that appear to be barren except for a few tiny favored places. I see a poor road but no animals or people. A few minutes later we cross another drainage-way that has no green along it.

At 30 minutes from Tashkent we come to the edge of the Fergana Valley and cross the Syr-Darya River, here a winding, mature stream with some braiding. This valley is about 150 kilometers wide and 300 kilometers long. The pattern from the ground varies from nearly regular irrigated fields to highly mottled ones. Some parts are nearly barren, probably partly from salt and partly from irregular relief. Certainly some of the fields are too salty for crops. Out further in the valley the villages are quite numerous.

Then at 38 minutes out I see to the northeast a large nearly barren plain that appears to be salty. One of our hosts says that it is Solonchak.

We soon reach the Yazyavanski Steppe, which is said to be the main part of the Fergana Valley. The soils are salty and seem probably to be in an old playa called the Fergana Depression. Apparently flood water and drainage water have been allowed to evaporate here.

At 45 minutes out the soils are less salty, yellowish-gray, nearly barren, and with mild relief. Then we come over green fields, mottled with Solonchak. As we go on the villages increase except for another area with this same mottling with Solonchak.

At 12:43 p.m. I can look far to the northeast at green fields and many villages. The Solonchak has decreased. We pass just south of Namangan and the wheels are down at Andizhan at 12:50. The town is said to be 470 to 500 meters above sea level. The rainfall is about 300 millimeters. It is now hot, dusty, and hazy.

We go at once with our hosts in the cars. There is cotton on either side of the road. Mulberry trees line parts of the road and are along many field boundaries. I see weedy tomatoes, alfalfa for seed, tobacco, grain sorghum, corn, hay, fallow, and a very tall grain sorghum.

As we enter the city I see one-story houses of local brick. The walls are much like those of southern Asia but the houses are neater and have more windows. As we get to the center of the city I see more Russian influence. Many of the houses and other buildings are pastel blues and greens.

We soon reach the Yazvavanski Steppe, which is said to be the main part of the Fergana Valley. The soils are salty and seem probably to be in an old playa called the Fergana Depression. Apparently flood water and drainage water have been allowed to evaporate here. At 45 minutes out the soils are less salty, yellowish-gray, nearly barren, and with mild relief. Then we come over green fields, mottled with Solonchak. As we go on the villages increase except for another area with this same mottling with Solonchak. At 12:43 p.m. I can look far to the northeast at green fields and many villages. The Solonchak has decreased. We pass just south of Namangan and the wheels are down at Andizhan at 12:50. The town is said to be 470 to 500 meters above sea level. The rainfall is about 300 millimeters. It is now hot, dusty, and hazy. We go at once with our hosts in the cars. There is cotton on either side of the road. Mulberry trees line parts of the road and there are along many field boundaries. I see weedy tomatoes, alfalfa for seed, tobacco, grain sorghum, corn, hay, fallow, and a very tall grain sorghum. As we enter the city I see one-story houses of local brick. The walls are much like those of southern Asia but the houses are neater and have more windows. As we get to the center of the city I see more Russian influence. Many of the houses and other buildings are pastel blues and greens.

We leave our baggage in the hotel and go to a banquet-luncheon given by our local hosts including the chief of the agricultural administration of the Andizhan Oblast, Mr. Abdurakhemov. This is more lunch than I want and there are a very great many more flies than I like. I am told that the Oblast produced last year 450,000 tons of seed cotton. This year they expect 475,000 tons with yields of 3 tons to the hectare.

I ask to go to the bazaars. We walk down the nicest street, Lenin Street, and it is perfectly obvious that I am purposely being led to the stores that sell goods from Russia. I ask again about the bazaars but my interpreter asks me not to press it. My guides are ashamed of the local bazaars that sell the Uzbek handicrafts. 'Tis a pity.

We get in the cars at 4:00 p.m. for a visit along the canal. It is said that soils have been irrigated here for 2,000 years but the present main canal was made in the 1930's. Cotton is the main crop but they have also rice, and corn and alfalfa are commonly grown in the rotation with cotton.

I am told that Andizhan started about 700 years ago. The old part of the town is characteristically Near East and my guides drive through that part as fast as they can. They are ridiculously self-conscious. Yet the local people are still building the old-style houses and walls. They start with oblong balls of mud about the size of a brick. They lay these on top of one another and put on a mud facing. Many are whitewashed; some have pastel pink, green, and

We leave our baggage in the hotel and go to a banquet-luncheon

given by our local hosts including the chief of the agricultural administration of the Andizhan Oblast, Mr. Abdurakhimov. This is more lunch than I want and there are a very great many more flies than I like. I am told that the Oblast produced last year 450,000 tons of seed cotton. This year they expect 475,000 tons with yields of 3 tons to the hectare.

I ask to go to the bazaars. We walk down the nicest street, Lenin Street, and it is perfectly obvious that I am purposely being led to the stores that sell goods from Russia. I ask again about the bazaars but my interpreter asks me not to press it. My guides are ashamed of the local bazaars that sell the Uzbek handicrafts. 'This a pity.

We get in the cars at 4:00 p.m. for a visit along the canal. It is said that soils have been irrigated here for 2,000 years but the present main canal was made in the 1930's. Cotton is the main crop but they have also rice, and corn and alfalfa are commonly grown in the rotation with cotton.

I am told that Andizhan started about 700 years ago. The old part of the town is characteristically Near East and my guides drive through that part as fast as they can. They are ridiculously self-conscious. Yet the local people are still building the old-style houses and walls. They start with oblong balls of mud about the size of a brick. They lay these on top of one another and put on a mud facing. Many are whitewashed; some have pastel pink, green, and

especially blue. The new houses are of rectangular mud brick, a bit higher, and with fitted windows and doors within frames.

We come to the first part of the Fergana Canal that leads off the Kara-Darya (equals Black River.) Construction of the present ferro-concrete dam was in 1939. Before, they had an old wooden canal. The new canal carries water to 330,000 hectares. Last year they added another 74,000 hectares and some additional can yet be added. They also get water for this canal from the Naryn River. For Formerly the flow in the canal was 100 cubic meters per second; now it is 175. And so on with many details. Our local hosts get a great deal of prompting from the people from Tashkent and Moscow. (Added later: As I understand the scheme in retrospect it provides for controlling the waters from the Syr-Darya, the Naryn, and other smaller streams and thus by pooling increases the dependable supply of water.)

We are told that each state and collective farm makes an annual application for water. They specify the area to be irrigated, the crops to be grown, and their estimate of water requirements. With these applications on hand a plan is developed. Allotments are made, based on them and the estimates of the water to be available.

These people are understandably proud of this diversion dam and all the rest of it. They give us a shower of statistics that no one could or should remember (K-2597)

especially blue. The new houses are of rectangular mud brick, a bit higher, and with fitted windows and doors within frames. We come to the first part of the Fergana Canal that leads off the Kara-Darya (equals Black River.) Construction of the present ferro-concrete dam was in 1939. Before, they had an old wooden canal. The new canal carries water to 330,000 hectares. Last year they added another 74,000 hectares and some additional can yet be added. They also get water for this canal from the Naryn River. Formerly the flow in the canal was 100 cubic meters per second; now it is 175. And so on with many details. Our local hosts get a great deal of prompting from the people from Tashkent and Moscow. (Added later: As I understand the scheme in retrospect it provides for controlling the waters from the Syr-Darya, the Naryn, and other smaller streams and thus by pooling increases the dependable supply of water.) We are told that each state and collective farm makes an annual application for water. They specify the area to be irrigated, the crops to be grown, and their estimate of water requirements. With these applications on hand a plan is developed. Allotments are made, based on them and the estimates of the water to be available. These people are understandably proud of this diversion dam and all the rest of it. They give us a shower of statistics that no one could or should remember (K-2597)



K-2597. August 10, 1958. Near Andizhan. Looking up the Kara-Darya River from the low diversion dam. In the bottle.



K-2598. August 10, 1958. Near Andizhan. Uzbek home near the main canal. (Very late evening.)

Formerly the K-2597. August 10, 1958. Near Andizhan. Looking
up the Kara-Darya River from the low diversion.

K-2598. August 10, 1958. Near Andizhan. Uzbek
These people are home near the main canal. (Very late
evening.)

It starts to sprinkle. To my amazement we are taken to another banquet under the trees at 5:10. Rarely have people sat to a banquet with less enthusiasm than we have. We had just risen from one at 3 o'clock! Here we have chicken, beef, sausage, salads, cheese, bread, candy, cookies, grapes, apples, nectarines, peaches, mutton and rice, melons, watermelons, cognac, vodka, wine, and champagne. It rains hard at 6:15 but instead of stopping the thing, the tables are set up again on the porch of a small house. After a few unsuccessful attempts, I finally make a toast that puts the cork in the bottle.

Now here it is about 7:00 and they take us over bad roads to look at the canals. After this rain they are positively dangerous. We make a stop where the canal is being rebuilt into two sections to avoid eroding the channel. At this spot I see a most picturesque Uzbek home. As I try to make friends with the family they are told to disappear. (K-2598)

The Uzbek people so far as I can tell are colorful, simple, and friendly.

It becomes dark and we start back. My hosts apologize for the roads which they should, but also for these picturesque Uzbek houses.

We return to the hotel about 9:00 p.m. after wasting most of our time since arrival. The Uzbek officials with us are obviously glad to see Americans. I think their self-consciousness is more because of the officials from Tashkent, and especially because of

It starts to sprinkle. To my amusement we are taken to another banquet under the trees at 5:10. Rarely have people sat to a banquet with less enthusiasm than we have. We had just risen from one at 3 o'clock! Here we have chicken, beef, sausage, salads, cheese, bread, candy, cookies, grapes, apples, nectarines, peaches, mutton and rice, melons, watermelons, cognac, vodka, wine, and champagne. It rains hard at 6:15 but instead of stopping the thing, the tables are set up again on the porch of a small house. After a few unsuccessful attempts, I finally make a toast that puts the cork in the bottle.

Now here it is about 7:00 and they take us over bad roads to look at the canals. After this rain they are positively dangerous. We make a stop where the canal is being rebuilt into two sections to avoid eroding the channel. At this spot I see a most picturesque Uzbek home. As I try to make friends with the family they are told to disappear. (K-2598)

The Uzbek people so far as I can tell are colorful, simple, and friendly.

It becomes dark and we start back. My hosts apologize for the roads which they should, but also for these picturesque Uzbek houses. We return to the hotel about 9:00 p.m. after wasting most of our time since arrival. The Uzbek officials with us are obviously glad to see Americans. I think their self-consciousness is more because of the officials from Tashkent, and especially because of

Melnikov from Moscow, than because of us. But the Uzbek sense of humor is about like that of the Indians, essentially non-existent; whereas the Russian sense of humor is very much like the American. very early morning walk and try to get some pictures of the And so to bed. martyrs. (K-2599; K-2602; K-2603; K-2601; K-2603) As I come back to the hotel several young men are exercising before the statue of Lenin in the little park. (K-2604)

We go to breakfast and I find that Dr. Cline is ill and we must leave him in the hotel. Some reported rats in their room last night. Several of the Americans are a bit nervous; I do not know what they would think of really bad accommodations. I tell Dr. Allaway that in some ways I will be glad to get them all back home. He replies: "That view is widely held."

We leave the hotel at 9 o'clock and go north of town. There are lots of children here. If the death rate is high, the birth rate must be explosive. We go on a cobblestone road with mud walls on either side, except for the central parts of the villages. In most places trees line the roads and canals.

At first we see cotton on strongly undulating soil that is said to be irrigated by pumping. I see some poor grapes and fallow after fodder crops. As we go along the grapes and other crops are better and there are rows of mulberry trees along the field lines with the cotton.

Melnikov from Moscow, than because of us. But the Uzbek sense

of humor is about like that of the Indians, essentially non-existent; whereas the Russian sense of humor is very much like

the American. As one at 3 o'clock? Have we gone out yet, I wonder?

And so cooped, and so cooped, and so cooped, and so cooped, and so cooped.

And so cooped, and so cooped, and so cooped, and so cooped, and so cooped.

And so cooped, and so cooped, and so cooped, and so cooped, and so cooped.

And so cooped, and so cooped, and so cooped, and so cooped, and so cooped.

And so cooped, and so cooped, and so cooped, and so cooped, and so cooped.

And so cooped, and so cooped, and so cooped, and so cooped, and so cooped.

And so cooped, and so cooped, and so cooped, and so cooped, and so cooped.

And so cooped, and so cooped, and so cooped, and so cooped, and so cooped.

And so cooped, and so cooped, and so cooped, and so cooped, and so cooped.

And so cooped, and so cooped, and so cooped, and so cooped, and so cooped.

And so cooped, and so cooped, and so cooped, and so cooped, and so cooped.

And so cooped, and so cooped, and so cooped, and so cooped, and so cooped.

And so cooped, and so cooped, and so cooped, and so cooped, and so cooped.

And so cooped, and so cooped, and so cooped, and so cooped, and so cooped.

And so cooped, and so cooped, and so cooped, and so cooped, and so cooped.

And so cooped, and so cooped, and so cooped, and so cooped, and so cooped.

And so cooped, and so cooped, and so cooped, and so cooped, and so cooped.

And so cooped, and so cooped, and so cooped, and so cooped, and so cooped.

And so cooped, and so cooped, and so cooped, and so cooped, and so cooped.

And so cooped, and so cooped, and so cooped, and so cooped, and so cooped.

August 11

Several Uzbeks sleep on cots in the court just under my window. They are up with the birds, and so am I.

I take a very early morning walk and try to get some pictures of the homes and courtyards. (K-2599; K-2602; K-2600; K-2601; K-2603) As I come back to the hotel several young men are exercising before the statue of Lenin in the little park. (K-2604)

We go to breakfast and I find that Dr. Cline is ill and we must leave him in the hotel. Some reported rats in their room last night. Several of the Americans are a bit nervous; I do not know what they would think of really bad accommodations. I tell Dr. Allaway that in some ways I will be glad to get them all back home. He replies: "That view is widely held."

We leave the hotel at 9 o'clock and go north of town. There are lots of children here. If the death rate is high, the birth rate must be explosive. We go on a cobblestone road with mud walls on either side, except for the central parts of the villages. In most places trees line the roads and canals.

At first we see cotton on strongly undulating soil that is said to be irrigated by pumping. I see some poor grapes and fallow after fodder crops. As we go along the grapes and other crops are better and there are rows of mulberry trees along the field lines with the cotton.

August 11

Several Uzbekas sleep on cots in the court just under my window.

They are up with the birds, and so am I.

I take a very early morning walk and try to get some pictures

of the homes and courtyards. (K-2599; K-2602; K-2600; K-2601; K-2603)

As I come back to the hotel several young men are exercising before

the statue of Lenin in the little park. (K-2604)

We go to breakfast and I find that Dr. Ching is ill and we must

leave him in the hotel. Some reported rats in their room last night.

Several of the Americans are a bit nervous; I do not know what they

would think of really bad accommodations. I tell Dr. Allaway that

in some ways I will be glad to get them all back home. He replies:

"That view is widely held."

We leave the hotel at 9 o'clock and go north of town. There

are lots of children here. If the death rate is high, the birth

rate must be explosive. We go on a cobblestone road with mud walls

on either side, except for the central parts of the villages. In

most places trees line the roads and canals.

At first we see cotton on strongly undulating soil that is said

to be irrigated by pumping. I see some poor grapes and fallow after

fodder crops. As we go along the grapes and other crops are better

and there are rows of mulberry trees along the field lines with the

cotton.



K-2599. August 11, 1958. Andizhan. Street in early morning.



K-2602. August 11, 1958. Andizhan. View from street through open door into courtyard (or alley?).

K-2601. August 11, 1958. Andizhan. Street in early morning.

K-2599. August 11, 1958. Andizhan. Street in early morning.

K-2602. August 11, 1958. Andizhan. View from street through open door into courtyard (or alley?).



K-2600. August 11, 1958. Andizhan. A group gathered in early morning.



K-2601. August 11, 1958. Andizhan. Early morning street scene.

K-2601. August 11, 1958. Angishan. Early morning street scene.

K-2600. August 11, 1958. Angishan. A group gathered in early morning.



K-2603. August 11, 1958. Andizhan. Picking up the sweepings in early morning.



K-2604. August 11, 1958. Andizhan. Young man doing early morning exercises before statue of Lenin.

K-2603. August 11, 1958. Andizhan. Picking up
the sweepings in early morning.

K-2604. August 11, 1958. Andizhan. Young man
going early morning exercises before
statue of Lenin.

We go through a narrow undulating valley and an oil field with wells about one per hectare.

We stop in this dry upland above the irrigated valley and I look at the cuts. This high rolling terrace is, I believe, the remnant of very old interbedded stream alluvium, possibly early or middle Pleistocene, or even earlier. (K-2605)

We go down onto the lower plain where irrigated cotton and alfalfa are the main crops along with small patches of fodder. In the very low places I see paddy rice and marsh hay. This low area broadens out and I see considerable rice quite badly contaminated with a grassy weed. Then we are back into the large area of cotton. I see some threshing of cereals on an earthen floor that follows the old custom of southern Asia.

We pass Yakuduk, a rayon headquarters. Along here I see quite a few Uzbeks on saddle horses and a very few on donkeys. Some of the villagers have a few fat-tailed sheep.

Some of the cotton is quite spotted and some of it has nitrogen deficiency. Part of the unevenness is due to uneven irrigation related to inadequate land leveling. I see small boys herding cows, sheep, and the odd donkey. From the road one sees both old bullock carts and cultivation of cotton with tractors. Laborers, mostly women, are taking out weeds by hand.

We drive through large areas of cotton with rows of mulberry trees. These trees are kept pruned to a trunk that is about 6 to 8 feet high and the tips of the branches are 15 or 20 feet from the ground.

We go through a narrow undulating valley and an oil field with

wells about one per hectare.

We stop in this dry upland above the irrigated valley and I

look at the cuts. This high rolling terrace is, I believe, the remnant of very old interbedded stream alluvium, possibly early

or middle Pleistocene, or even earlier. (K-2605)

We go down onto the lower plain where irrigated cotton and

alfalfa are the main crops along with small patches of fodder. In

the very low places I see paddy rice and marsh hay. This low area

produces out and I see considerable rice quite badly contaminated

with a grassy weed. Then we are back into the large area of cotton.

I see some threshing of cereals on an earthen floor that follows the

old custom of southern Asia.

We pass Yakuduk, a rayon headquarters. Along here I see quite

a few Uzbeks on saddle horses and a very few on donkeys. Some of

the villagers have a few fat-tailed sheep.

Some of the cotton is quite spotted and some of it has nitrogen

deficiency. Part of the unevenness is due to uneven irrigation related

to inadequate land leveling. I see small boys herding cows, sheep,

and the odd donkey. From the road one sees both old bullock carts

and cultivation of cotton with tractors. Laborers, mostly women,

are taking out weeds by hand.

We drive through large areas of cotton with rows of mulberry

trees. These trees are kept pruned to a trunk that is about 6 to

8 feet high and the tips of the branches are 15 or 20 feet from the

ground.

We pass Kurgan Taba, another major transportation hub. Then we come to the Savay State Park. The director, Mr. [unclear] greets us. We go into the office for a discussion. This farm is [unclear]



K-2605. August 11, 1958. North of Andizhan. Looking from hills down onto irrigated lower land (Sierozem).

Cotton

Hybrid corn for grain

Corn for silage

Alfalfa for hay

Alfalfa for green fodder

Alfalfa for seed

Mixed alfalfa and oats

Orchards and vineyards

Potatoes

Vegetables

Melons and watermelons

200

300

417

150

424

50

20

10

25

K-2605. August 11, 1958. North of Andizhan. Looking from hills
down onto irrigated lower land (Sirozem).

We pass Kurgan Teba, another rayon headquarters. Just beyond we come to the Savay State Farm. The director, Mr. Avazmatov, greets us. We go into the office for a discussion. This farm is only a kilometer from the border of the Kirgiz Republic. Until recently the land here was dry steppe. The construction of the Sharikhan Sai Canal allowed the development of this area for farming. The name Savay comes from that of a Kirgiz man who was said to have developed the first irrigation here with a canal from the Kara-Darya. This farm is irrigated by a newer and improved canal that delivers water at 25 cubic meters per second.

The farm was originally organized in 1929 and has a total of 8,000 hectares of which 6,500 are irrigated. On the farm are 2,700 families and a total population of 8,000. They have about 4,500 workers, about half of whom are women.

The crops are given us as follows, in hectares:

Cotton	4,300
Hybrid corn for grain	230
Corn for silage	208
Alfalfa for hay	315
Alfalfa for green fodder	417
Alfalfa for seed	150
Mixed alfalfa and oats	424
Orchards and vineyards	50
Potatoes	20
Vegetables	10
Melons and watermelons	25

We pass Kurgan Tebs, another rayon headquarters. Just beyond we come to the Savay State Farm. The director, Mr. Avastmatov, greets us. We go into the office for a discussion. This farm is only a kilometer from the border of the Kirgiz Republic. Until recently the land here was dry steppe. The construction of the Sharikhan Sai Canal allowed the development of this area for farming. The name Savay comes from that of a Kirgiz man who was said to have developed the first irrigation here with a canal from the Kara-Darya. This farm is irrigated by a newer and improved canal that delivers water at 25 cubic meters per second.

The farm was originally organized in 1929 and has a total of 8,000 hectares of which 6,500 are irrigated. On the farm are 2,700 families and a total population of 8,000. They have about 4,500 workers, about half of whom are women.

The crops are given us as follows, in hectares:

4,300	Cotton
230	Hybrid corn for grain
208	Corn for silage
312	Alfalfa for hay
417	Alfalfa for green fodder
120	Alfalfa for seed
424	Mixed alfalfa and oats
50	Orchards and vineyards
20	Potatoes
10	Vegetables
22	Melons and watermelons

Besides, there are 320 hectares of the private family plots.

The livestock is as follows:

Cattle (1957)	598
Cattle (1958)	671 of which 236 are milk cows
Hogs	1,211
Work horses	650
Sheep	3,377

The sheep flock is being converted from a fat-tailed flock into a fine-wool one.

We are told that people start work on this farm at 18 years.

Younger people are required to go to school. Women can retire between ages 50 and 55 and men between ages 50 and 60, depending on their health. This year about 30 boys and girls went away for higher education, and 45 of their people graduated from the secondary institute for mechanics.

On their staff they have 15 agronomists, 3 irrigation engineers, 4 officers for animal husbandry and veterinary medicine, and 5 mechanical engineers.

The state farm is divided into 10 sections, and in addition one for mechanics. Then each of the 10 sections has a mechanic who is a graduate from a secondary school of mechanics. These sections are comparable to the brigades of other state and collective farms. Nine of the 10 sections handle crops and one is for livestock.

(The setup is a rather rigid setup and must take a large headquarters staff of technicians and clerks although I don't know.)

Besides, there are 320 hectares of the private family plots.

The livestock is as follows:

Cattle (1957) 298

Cattle (1958) 671 of which 236 are milk cows

Hogs 1,211

Work horses 650

Sheep 3,377

The sheep flock is being converted from a fat-tailed flock into

a fine-wool one.

We are told that people start work on this farm at 18 years.

Younger people are required to go to school. Women can retire between

ages 50 and 55 and men between ages 50 and 60, depending on their

health. This year about 30 boys and girls went away for higher

education, and 45 of their people graduated from the secondary insti-

tute for mechanics.

On their staff they have 15 agronomists, 3 irrigation engineers,

4 officers for animal husbandry and veterinary medicine, and 5 mechani-

cal engineers.

The state farm is divided into 10 sections, and in addition one

for mechanics. Then each of the 10 sections has a mechanic who is

a graduate from a secondary school of mechanics. These sections are

comparable to the brigades of other state and collective farms. Nine

of the 10 sections handle crops and one is for livestock.

The manager gives us a sample of one section headed by an engineer that looks after 430 hectares. Besides cotton, they have the following, in hectares:

Hybrid corn	30
Silage corn	20
Alfalfa for hay	31
Alfalfa for green fodder	15
Alfalfa for seed	26

Potatoes has its own village. Orchards and vineyards. Vegetables and melons. Each of these sections is organized into about 6 brigades. For example, the first brigade of the first section has 82 hectares of cotton. Brigades have 15 to 20 workers each. Then besides the other field brigades, each section has two complex mechanized brigades of 8 to 10 workers. Yet each cotton-growing brigade also has two tractors. Three or four members of each cotton-growing brigade look after the irrigation. The others work according to the plan of the brigade leader, but not on a specific tract of land. The brigades generally look after certain crops, such as cotton, alfalfa, and corn. Thus a brigade shifts its area with the rotation of 6 years cotton and 3 years alfalfa. Each section has its own plan in which it shifts the brigades. (This seems to me to be a rather rigid setup and must take a large headquarters staff of technicians and clerks although I don't know.)

The manager gives us a sample of one section headed by an engineer that looks after 430 hectares. Besides cotton, they have the following, in hectares:

Hybrid corn (1904)	30
Silage corn	20
Alfalfa for hay	31
Alfalfa for green fodder	15
Alfalfa for seed	26
Potatoes	1
Orchards and vineyards	2
Vegetables and melons	2

Each of these sections is organized into about 6 brigades. For example, the first brigade of the first section has 82 hectares of cotton. Brigades have 15 to 20 workers each. Then besides the 2 other field brigades, each section has two complex mechanized brigades of 8 to 10 workers. Yet each cotton-growing brigade also has two tractors. Three or four members of each cotton-growing brigade look after the irrigation. The others work according to the plan of the brigade leader, but not on a specific tract of land. The brigades generally look after certain crops, such as cotton, alfalfa, and corn. Thus a brigade shifts its area with the rotation of 6 years cotton and 3 years alfalfa. Each section has its own plan in which it shifts the brigades. (This seems to me to be a rather rigid setup and must take a large headquarters staff of technicians and clerks although I don't know.)

The chief engineer has the responsibility for irrigation on the whole farm and one assistant distributes the water among the sections. Another assistant looks after the structures. Each section has an agronomist who instructs the workers when and how to irrigate. The chief agronomist for the farm has the final authority on the irrigation program. Section programs are reviewed and coordinated by him. When the program is completed it is given to the chief engineer who must arrange for the water to carry it out.

Each section has its own village. The salaries of the workers depend upon their position of responsibility. The brigade leader gets 500 to 700 rubles per month plus a bonus if the production exceeds the quote. Their average salaries now with the bonuses run about 900 to 1,500 rubles per month. An irrigator gets 700 to 1,000 rubles according to the work he does, rather than a guaranteed salary plus bonus. When the irrigator fulfills his quota of 0.7 hectares, he gets 26 rubles. If he irrigates more he gets 150 percent bonus for the extra area. The figure for common labor is about 17 rubles.

In the headquarters staff are three vice-directors - an engineer, an agronomist, and a business manager. There are also 5 bookkeepers, two people who work on planning, two who look after building along with 100 workers, one personnel officer, and 30 who work in the machine shops. Then there are other mechanics, agronomists, and bookkeepers in the headquarters of the sections.

Part of these are delivered to the families for fuel. This year around 1,500 tons were delivered to the government for making alcohol.

The chief engineer has the responsibility for irrigation on the whole farm and one assistant distributes the water among the sections. Another assistant looks after the structures. Each section has an agronomist who instructs the workers when and how to irrigate. The chief agronomist for the farm has the final authority on the irrigation program. Section programs are reviewed and coordinated by him. When the program is completed it is given to the chief engineer who must arrange for the water to carry it out. Each section has its own village. The salaries of the workers depend upon their position of responsibility. The brigade leader gets 500 to 700 rubles per month plus a bonus if the production exceeds the quota. Their average salaries now with the bonuses run about 900 to 1,500 rubles per month. An irrigator gets 700 to 1,000 rubles according to the work he does, rather than a guaranteed salary plus bonus. When the irrigator fulfills his quota of 0.7 hectares, he gets 25 rubles. If he irrigates more he gets 150 percent bonus for the extra area. The figure for common labor is about 17 rubles. In the headquarters staff are three vice-directors - an engineer, an agronomist, and a business manager. There are also 5 bookkeepers, two people who work on planning, two who look after building along with 100 workers, one personnel officer, and 30 who work in the machine shops. Then there are other mechanics, agronomists, and bookkeepers in the headquarters of the sections.

He tells me that last year they got 2.56 tons of seed cotton per hectare. (This would amount to around 1.6 to 1.8 bales of lint cotton per acre.)

I ask about the fertilizers on cotton. The total of mineral fertilizers per hectare is said to be 126 kilograms of N, 117 kilograms of P_2O_5 , and 30 kilograms KCl. They plow down 70 percent of the phosphorus in the fall. Fifteen percent of the phosphorus is applied as a side dressing before buds form and another 15 percent as a side dressing at flowering.

The nitrogen is put on in three applications as side dressings: (1) with the first side dressing of phosphorus before budding, along with organic fertilizers; (2) along with phosphorus and organic fertilizers at the stage of mass budding and flowering, and (3) at the stage of mass flowering and boll formation. Dried and pulverized farm manure is mixed with the fertilizer. They use 200 kilograms of farm manure in addition to the mineral nitrogen. They use mainly ammonium nitrate, which gives them 3 dressings of about 35, 45, and 30 kilograms of N.

On cotton that is growing one, two, or three years after alfalfa they include some potassium in the fertilizer dressings, but not on the other fields. They do not treat the seeds with azotobacter.

They have a machine for pulling out and binding into sheaves the old cotton stalks. Part of these are delivered to the families for fuel. This year around 1,500 tons were delivered to the government for making alcohol.

He tells me that last year they got 2.56 tons of seed cotton

per hectare. (This would amount to around 1.6 to 1.8 bales of

lint cotton per acre.)

I ask about the fertilizers on cotton. The total of mineral

fertilizers per hectare is said to be 126 kilograms of N, 117 kilo-

grams of P_2O_5 , and 30 kilograms KCl. They plow down 70 percent of

the phosphorus in the fall. Fifteen percent of the phosphorus is

applied as a side dressing before buds form and another 15 percent

as a side dressing at flowering.

The nitrogen is put on in three applications as side dressings:

(1) with the first side dressing of phosphorus before budding, along

with organic fertilizers; (2) along with phosphorus and organic ferti-

lizers at the stage of mass budding and flowering, and (3) at the

stage of mass flowering and boll formation. Dried and pulverized

farm manure is mixed with the fertilizer. They use 200 kilograms

of farm manure in addition to the mineral nitrogen. They use mainly

ammonium nitrate, which gives them 3 dressings of about 35, 45, and

30 kilograms of N.

On cotton that is growing one, two, or three years after alfalfa

they include some potassium in the fertilizer dressings, but not on

the other fields.

They do not treat the seeds with azotobacter.

They have a machine for pulling out and binding into sheaves the

old cotton stalks. Part of these are delivered to the families for

fuel. This year around 1,500 tons were delivered to the government

for making alcohol.

Irrigation practices depend upon the state of the cotton; and some soils take more water than others. Generally they irrigate 4 to 6 times.

From what they say the soil situation must be nearly ideal. Generally the soil is silt loam or silty clay loam around 3 meters deep over gravel. The water table is said to be down at about 100 meters. Normally during the growing season they get 35 to 40 millimeters of rain; but this year they had 90. They use about 800 to 1,000 cubic meters of water per hectare for each application.

Some fields require a little leveling every year but they have very little heavy leveling to do.

Although many collective farms grow silkworms they are not grown on this state farm. Adjoining collective farms use some of the mulberry leaves produced on this farm. Normally, alfalfa yields about 7 to 8 tons of hay but this year they expect 9. This crop gets about 120 to 150 kilograms of P_2O_5 per hectare. This is applied once in March, along with disking. The alfalfa is cut 4 times and pastured in the fall.

They receive 1,800 rubles for a ton of seed cotton. The primary cost for growing a ton of cotton is said to be 1,550 rubles. The farm buys back some of the cotton cake for feeding cattle. They seed cotton at a rate of 50 to 60 kilograms per hectare, in check rows.

One of the Americans asks the director what his salary is. His basic salary is 2,700 rubles per month but if the farm plan is over

Irrigation practices depend upon the state of the cotton; and some soils take more water than others. Generally they irrigate 4 to 6 times.

From what they say the soil situation must be nearly ideal. Generally the soil is silt loam or silty clay loam around 3 meters deep over gravel. The water table is said to be down at about 100 meters. Normally during the growing season they get 35 to 40 millimeters of rain; but this year they had 90. They use about 800 to 1,000 cubic meters of water per hectare for each application. Some fields require a little leveling every year but they have

very little heavy leveling to do. Although many collective farms grow silkworms they are not grown on this state farm. Adjoining collective farms use some of the mulberry leaves produced on this farm. Normally, alfalfa yields about 7 to 8 tons of hay but this year they expect 9. This crop gets about 120 to 150 kilograms of P_2O_5 per hectare. This is applied once in March, along with disking. The alfalfa is cut 4 times and pastured in the fall.

They receive 1,800 rubles for a ton of seed cotton. The primary cost for growing a ton of cotton is said to be 1,550 rubles. The farm buys back some of the cotton cake for feeding cattle. They seed cotton at a rate of 50 to 60 kilograms per hectare, in check rows. One of the Americans asks the director what his salary is. His basic salary is 2,700 rubles per month but if the farm plan is over

fulfilled, as he expects it will be, it will amount to 4,000 rubles per month.

I am shown a copy of a small-scale soil map, (1:50,000) made of this farm in 1932.

We then go to lunch. A beautiful table is arranged under a grapevine arbor back of the small hotel on the farm. The excellent lunch is ended at 2:00 p.m. We then take a walk through this headquarters village. I go into one of the new houses. Besides the kitchen it has two other small rooms. The kitchen has a small electric refrigerator. Under one of the beds I see a chest and remark that if I were further south I would assume this to be a dowry chest. My interpreter asks the owner about the chest and it is his wife's dowry chest. So some of the old traditions remain in spite of the new ideas.

There is a nice store on this farm and many other new houses. (K-2606; K-2607) A fine new clubhouse with a theater is substantially completed. I go into a 75-bed hospital for the people on this farm. The staff and facilities are neat and clean.

We walk into a school for 1,200 boys and girls, which is quite good. Both the school and hospital are supported by the government. The school is run by the government but the state farm built the building and furnishes accommodations for the teachers. I see several more new houses and others being built. Many trees have been newly planted.

fulfilled, as he expects it will be, it will amount to 4,000 rubles

per month.

I am shown a copy of a small-scale soil map, (1:50,000) made of

this farm in 1932.

We then go to lunch. A beautiful table is arranged under a

grapevine arbor back of the small hotel on the farm. The excellent

lunch is ended at 2:00 p.m. We then take a walk through this head-

quarters village. I go into one of the new houses. Besides the

kitchen it has two other small rooms. The kitchen has a small electric

refrigerator. Under one of the beds I see a chest and remark that it

I were further south I would assume this to be a dowry chest. My

interpreter asks the owner about the chest and it is his wife's dowry

chest. So some of the old traditions remain in spite of the new ideas.

There is a nice store on this farm and many other new houses.

(K-2606; K-2607) A fine new clubhouse with a theater is substantially

completed. I go into a 75-bed hospital for the people on this farm.

The staff and facilities are neat and clean.

We walk into a school for 1,200 boys and girls, which is quite

good. Both the school and hospital are supported by the government.

The school is run by the government but the state farm built the

building and furnishes accommodations for the teachers. I see several

more new houses and others being built. Many trees have been newly

planted.



K-2606. August 11, 1958. North of Andizhan. New home on Savay State Farm.



K-2607. August 11, 1958. North of Andizhan. Same new home from the street.

K-2606. August 11, 1958. North of Andizhan. New home on
Savay State Farm.

K-2607. August 11, 1958. North of Andizhan. Same new home
from the street.

Then we go into the fields and look at the cotton. (K-2608)

The irrigation is not well controlled. (K-2654) I also see some good corn and some oats now being cut by a combine harvester.

I had asked the manager how they apply their fertilizers. He had told me that although it was out of season they would demonstrate. We go to the place of demonstration. They have sieved dry manure and mix 2 parts of it (by volume) with one part of superphosphate. (K-2610) This superphosphate has 18 percent P_2O_5 . Then they have a pile of ammonium nitrate in rather poor physical condition that runs 34 percent nitrogen. (K-2611) The machine is a tractor-mounted cultivator with a fertilizer applicator. It has two large circular containers for the fertilizer. Each one leads to four outlets. Each of these containers is divided by a small board. The mixture of manure and superphosphate is put on one side of each of the two containers and the ammonium nitrate on the other. Thus each row of cotton gets the mixture on one side and the ammonium nitrate on the other side. The reason for this mixing of the dry manure and superphosphate given is that according to Lysenko the phosphorus is made more available. (I doubt this very much.) The machine seems to work well once they get it adjusted. (K-2612)

The manager says that two years ago they got 100 kilograms of cotton for 8 man-days of labor and now they get it for 4 man-days. Last year they got 7.2 tons of seed cotton per worker and this year they expect 10 tons. These figures do not mean much to me without knowing more precisely how they are calculated and with what included overhead.

Then we go into the fields and look at the cotton. (K-2608)

The irrigation is not well controlled. (K-2624) I also see some

good corn and some oats now being cut by a combine harvester.

I had asked the manager how they apply their fertilizers. He

had told me that although it was out of season they would demonstrate.

We go to the place of demonstration. They have sieved dry manure and

mix 2 parts of it (by volume) with one part of superphosphate. (K-2610)

This superphosphate has 18 percent P_2O_5 . Then they have a pile of

ammonium nitrate in rather poor physical condition that runs 34 per-

cent nitrogen. (K-2611) The machine is a tractor-mounted cultivator

with a fertilizer applicator. It has two large circular containers

for the fertilizer. Each one leads to four outlets. Each of these

containers is divided by a small board. The mixture of manure and

superphosphate is put on one side of each of the two containers and

the ammonium nitrate on the other. Thus each row of cotton gets the

mixture on one side and the ammonium nitrate on the other side. The

reason for this mixing of the dry manure and superphosphate given

is that according to Lysenko the phosphorus is made more available.

(I doubt this very much.) The machine seems to work well once they

get it adjusted. (K-2612)

The manager says that two years ago they got 100 kilograms of

cotton for 8 man-days of labor and now they get it for 4 man-days.

Last year they got 7.2 tons of seed cotton per worker and this year

they expect 10 tons. These figures do not mean much to me without

knowing more precisely how they are calculated and with what included

overhead.



K-2608. August 11, 1958. North of Andizhan.
Typical cotton field Savay State Farm.

K-2607. August 11, 1958. North of Andizhan. Savay
State Farm. Irrigation canals and small
dweeping machine.

Then we go into the (1948) and look at the cotton. (K-1948)

The irrigation is not well controlled. (K-1948) I also saw some

good cotton and some late now being cut by a machine harrow.

I had asked the manager how they were doing. (K-1948)

had told me that the cotton was not doing well. (K-1948)

He said the cotton was not doing well. (K-1948)

with a lot of water. (K-1948)

This year the cotton was not doing well. (K-1948)

because of the water. (K-1948)

and the cotton was not doing well. (K-1948)

with a lot of water. (K-1948)

for the cotton. (K-1948)

because of the water. (K-1948)

and the cotton was not doing well. (K-1948)

with a lot of water. (K-1948)

for the cotton. (K-1948)

because of the water. (K-1948)

and the cotton was not doing well. (K-1948)

with a lot of water. (K-1948)

for the cotton. (K-1948)

because of the water. (K-1948)

and the cotton was not doing well. (K-1948)

with a lot of water. (K-1948)

for the cotton. (K-1948)

because of the water. (K-1948)

and the cotton was not doing well. (K-1948)

with a lot of water. (K-1948)



K-2610. August 11, 1958. North of Andizhan. Savay State Farm. One part superphosphate and 2 parts dry manure, by volume.



K-2611. August 11, 1958. North of Andizhan. Savay State Farm. Ammonium nitrate for side dressing cotton.

K-2610. August 11, 1958. North of Andizhan.
Savay State Farm. One part superphosphate
and 2 parts dry manure, by volume.

K-2611. August 11, 1958. North of Andizhan. Savay
State Farm. Ammonium nitrate for side
dressing cotton.



K-2654. August 11, 1958. North of A ndizhan. Savay State Farm.
Irrigating cotton.

K-2654

K-2654. August 11, 1958. North of A ngishan. Savvy State Farm.
Irrigating cotton.

K-2654. August 11, 1958. North of A ngishan. Savvy State Farm.
Irrigating cotton.

We next go over and look at the corn, which is a hybrid called VIR 42. The ears look good and there is a rather high ratio of cobs to fodder. Both the manager and I, independently, estimate a yield of about 3 tons of grain per hectare.



K-2612. August 11, 1958. North of Andizhan.
Cultivator with fertilizer attachment
mounted on tractor. Savay State Farm.

After looking over the farm we are taken again to the glass house for supper. The people here are certainly very friendly and we had told the manager that I lacked a good photograph of a Turkmen sheep. We are hardly at the table before a man brings in two mountain specimens. One is a 7-month-old ram with a set of horns that weigh 20 to 25 pounds. (K-2653)

Of course this is another Uzbek feast with wine and flowers. The drinking is not so heavy on this farm.

K-2612. August 11, 1958. North of Andizhan.
Cultivator with fertilizer attachment
mounted on tractor. Savay State Farm.
Fertilizing cotton.

We next go over and look at the corn, which is a hybrid called VIR 42. The ears look good and there is a rather high ratio of grain to fodder. Both the manager and I, independently, estimate a yield of about 3 tons of grain per hectare.

The manager asks me what I think of his farm. I tell him that it is a good farm but that with more experience with herbicides they could cut out a lot of the individual work and increase yields. He says that he agrees with this point of view. I go on to tell him I don't think it is wise to try to change methods too rapidly. These people have their own ways and their working lives are tied in with the rest of their lives. If one tries to change too rapidly people are likely to become somewhat unadjusted and in extreme cases there are serious moral breakdowns and other deficiencies that offset the gains in labor efficiency. (I don't think the leaders here have given enough attention to this point of view. Obviously, he had not thought much about it.)

After looking over the farm we are taken again to the grape arbor for supper. The people here are certainly very friendly and cordial. I had told the manager that I lacked a good photograph of a fat-tailed sheep. We are hardly at the table before a man brings in two beautiful specimens. One is a 7-month-old ram with a fat tail that must weigh 20 to 25 pounds. (K-2655)

Of course this is another Uzbek feast with toasts and flowers. The drinking is not so heavy on this farm.

We next go over and look at the corn, which is a hybrid called VIR 42. The ears look good and there is a rather high ratio of grain to fodder. Both the manager and I, independently, estimate a yield of about 3 tons of grain per hectare.

The manager asks me what I think of his farm. I tell him that it is a good farm but that with more experience with herbicides they could cut out a lot of the individual work and increase yields. He says that he agrees with this point of view. I go on to tell him I don't think it is wise to try to change methods too rapidly. These people have their own ways and their working lives are tied in with the rest of their lives. If one tries to change too rapidly people are likely to become somewhat unadjusted and in extreme cases there are serious moral breakdowns and other deficiencies that offset the gains in labor efficiency. (I don't think the leaders here have given enough attention to this point of view. Obviously, he had not thought much about it.)

After looking over the farm we are taken again to the grape arbor for supper. The people here are certainly very friendly and cordial. I had told the manager that I lacked a good photograph of a fat-tailed sheep. We are hardly at the table before a man brings in two beautiful specimens. One is a 7-month-old ram with a fat tail that must weigh

20 to 25 pounds. (K-2622)

Of course this is another Uzbek feast with coats and flowers. The

drinking is not so heavy on this farm.

We leave at 6:30 p.m. and are back in the hotel at 11. An arrangement has been made for us to see some of the "good" crafts, in one of their stores, and in a house. They show us how they come from Moscow and in the city.

Cline is better and is back in the city.

The

cant sell

I am

a good for



K-2655. August 11, 1958. North of Andizhan. Savay State Farm. Fat-tailed ram (20 to 25 pounds of fat in the tail).

K-2655. August 11, 1958. North of Andishan, Savay State Farm. Fat-tailed ram (20 to 25 pounds of fat in the tail).

August 12
We leave at 6:50 p.m. and are back to the hotel at 8. An arrangement has been made for me to see some of the "local handicrafts," in one of their stores, not in a bazaar. Most of what they show me has come from Moscow and is not very good.

Cline is better now and Dr. Allaway is in good spirits.

These soils here are quite good indeed. I saw today no significant salinity but I did see a little iron chlorosis.

I am fairly early to bed after one of our best days. This was a good farm under a good manager.

As we go on the valley narrows. Along the side of it is a steeped-faced escarpment in an ancient alluvial or lacustrine deposit. The bedding is fairly even. It is possibly Tertiary, or more likely Pliocene. Since the old plain was strongly dissected the edge of the fresh escarpment is very uneven.

As we go on the valley broadens again. Most of the cultivated land is used for cotton and mulberries but there are some fields of alfalfa and fodder crops and the private plots have fruit, fodder, and vegetables. To the south I see a range of jagged peaks covered with snow.

We pass Markhamat, another rayon headquarters, and come to the Sverdlov Collective Farm, which is obviously better than most. We arrive at 8:00 a.m. and already the loud speaker at the headquarters is blaring forth.

We leave at 6:50 p.m. and are back to the hotel at 8. An arrangement has been made for me to see some of the "local handicrafts," in one of their stores, not in a bazaar. Most of what they show me has come from Moscow and is not very good. Cline is better now and Dr. Allaway is in good spirits. These soils here are quite good indeed. I saw today no significant salinity but I did see a little iron chlorosis. I am fairly early to bed after one of our best days. This was a good farm under a good manager.

August 12

We are up early to pack and then go for breakfast on a collective farm called Sverdlov. We leave the hotel at 7:00 a.m. and drive southeast. For a long way we see cotton and mulberry trees on either side of the road. This is a beautiful landscape in the early morning sun. We pass through a collective farm called Stalin. The mud walls along the road conceal the homes.

We pass Leninsk, a rayon headquarters with a cotton gin and a hydro-electric plant.

As we go on the valley narrows. Along the side of it is a steeped-faced escarpment in an ancient alluvial or lacustrine deposit. The bedding is fairly even. It is possibly Tertiary, or more likely Pliocene. Since the old plain was strongly dissected the edge of the fresh escarpment is very uneven.

As we go on the valley broadens again. Most of the cultivated land is used for cotton and mulberries but there are some fields of alfalfa and fodder crops and the private plots have fruit, fodder, and vegetables. To the south I see a range of jagged peaks covered with snow.

We pass Markhamat, another rayon headquarters, and come to the Sverdlov Collective Farm, which is obviously better than most. We arrive at 8:00 a.m. and already the loud speaker at the headquarters is blaring forth.

August 12

We are up early to pack and then go for breakfast on a collective farm called Sverdlov. We leave the hotel at 7:00 a.m. and drive southeast. For a long way we see cotton and mulberry trees on either side of the road. This is a beautiful landscape in the early morning sun. We pass through a collective farm called Stalin. The mud walls along the road conceal the homes. We pass Leninak, a rayon headquarters with a cotton gin and a hydro-electric plant.

As we go on the valley narrows. Along the side of it is a steeped-faced escarpment in an ancient alluvial or lacustrine deposit. The bedding is fairly even. It is possibly Tertiary, or more likely Pliocene. Since the old plain was strongly dissected the edge of the fresh escarpment is very uneven.

As we go on the valley broadens again. Most of the cultivated land is used for cotton and mulberries but there are some fields of alfalfa and fodder crops and the private plots have fruit, fodder, and vegetables. To the south I see a range of jagged peaks covered with snow.

We pass Markhamat, another rayon headquarters, and come to the Sverdlov Collective Farm, which is obviously better than most. We arrive at 8:00 a.m. and already the loud speaker at the headquarters is blaring forth.

We meet the chairman, Mr. Dadgibaev, a solid Uzbek who has been chairman of this farm for 20 years. Since he speaks only Uzbek, again we have a double translation. Thank goodness Mr. Melnikov, or someone, gets the girls to remove the liquor bottles from the breakfast table.

After breakfast we go into the farm office. The farm was organized in 1931 and has a total area of 3,000 hectares, of which 1,590 are irrigated.

The land is used as follows, in hectares:

Cotton	1,200
Alfalfa	250
Corn for grain	15
Corn for silage	85
Orchards and vineyards	40
Pasture	1,400

The livestock includes, 510 cattle, of which 160 are milk cows, 115 horses, and 2,900 fat-tailed sheep of the Gissar breed.

They have 31 tractors of all types, 11 trucks, 3 cars, and the usual tillage machinery.

Last year their yield of seed cotton was 3.6 tons per hectare (about 2.2 to 2.5 bales of lint cotton per acre) and this year they expect 3.7 tons.

up in the right way, to help the workers reach the goals of the farm.

We meet the chairman, Mr. Dadgibayev, a solid Uzbek who has been chairman of this farm for 20 years. Since he speaks only Uzbek, again we have a double translation. Thank goodness Mr. Melnikov, or someone, gets the girls to remove the liquor bottles from the breakfast table.

After breakfast we go into the farm office. The farm was organized in 1931 and has a total area of 3,000 hectares, of which 1,500 are irrigated.

The land is used as follows, in hectares:

Cotton	1,200
Alfalfa	250
Corn for grain	15
Corn for silage	85
Orchards and vineyards	40
Pasture	1,400

The livestock includes, 210 cattle, of which 160 are milk cows, 115 horses, and 2,900 fat-tailed sheep of the Gissar breed. They have 31 tractors of all types, 11 trucks, 3 cars, and the usual tillage machinery.

Last year their yield of seed cotton was 3.6 tons per hectare (about 2.2 to 2.5 bales of lint cotton per acre) and this year they expect 3.7 tons.

Here the 1,200 hectares of cotton are divided among 20 cotton-growing brigades. Besides they have brigades for alfalfa, livestock, and two for orchards and vineyards.

The farm has 940 families including 1,400 workers, of which one-half are said to be women (although it looks to me as if there were more women than men.) We are told that pregnant women or those with small children do not work in the field. People live in 9 villages on this farm.

I am told that last year one labor-day paid:

18.7 rubles

2.5 kilograms grain. The government sells them up to 350 kilograms of grain for each ton of cotton delivered.

25 grams of meat by live weight (or 2.5 kilograms for each 100 labor-day units).

250 grams of grapes.

5 kilograms of silage.

As much hay as needed, from the meadows.

The average laborer gets about 300 to 400 labor-days per year.

A total of 527,000 labor-day units were earned on the farm last year.

Each family has .14 hectares for its own use. Most have one or two cows, about 10 sheep, and some poultry. A few farmers have bees.

On this farm there is a secretary of the local Communist Party organization "to work with the local people in order to bring them up in the right way, to help the chairman reach the goals of the farm,

The staff includes 2 agronomists, 2 agro-technicians, one animal husbandry officer, 2 hydro-technical engineers, and one civil engineer.

Here the 1,200 hectares of cotton are divided among 20 cotton-growing brigades. Besides they have brigades for alfalfa, livestock, and two for orchards and vineyards. The farm has 940 families including 1,400 workers, of which one-half are said to be women (although it looks to me as if there were more women than men.) We are told that pregnant women or those with small children do not work in the field. People live in 9 villages on this farm.

I am told that last year one labor-day paid:
18.7 rubles

- 2.5 kilograms grain. The government sells them up to 320 kilograms of grain for each ton of cotton delivered.
- 25 grams of meat by live weight (or 2.5 kilograms for each 100 labor-day units).
- 250 grams of grapes.
- 5 kilograms of silage.

As much hay as needed, from the meadows. The average laborer gets about 300 to 400 labor-days per year. A total of 527,000 labor-day units were earned on the farm last year. Each family has 14 hectares for its own use. Most have one or two cows, about 10 sheep, and some poultry. A few farmers have bees. On this farm there is a secretary of the local Communist Party organization to work with the local people in order to bring them up in the right way, to help the chairman reach the goals of the farm.

and to work with the children as a sort of social director." We are told that this is a full-time political and propaganda job.

They tell me that women laborers may retire at 55 and men at 60 or earlier on account of health. We are told that when a laborer retires the size of his pension is 80 percent of the average number of labor-day units of the previous four years. A young man, hurt on the farm and unable to work, would get a pension calculated in the same way.

The farm has six schools of which two are 10-year schools, attended by 1,500 children. The farm has a nursery, hospital, and a nearly completed new clubhouse.

Last year 4,440 tons of cotton were delivered at a price of 4,800 rubles per ton including bonuses for exceeding the plan. Then we are told that total gross income is 17,620,000 rubles. According to my information yesterday from the state farm they had 1,800 rubles per ton. (Added later: This figure of 4,800 rubles must be seriously in error, yet Mr. Bulik got the same figure. Likely the correct figure is 1,800 or a bit more.)

This farm has 20,000 mulberry trees. Last year they delivered 27 tons of silkworm cocoons. The silkworms are produced in the houses of the individual farmers. They are paid so many labor-day units for the cocoons. Now I'm told that three brigades handle the silkworms. Each one has a special "agronomist."

The staff includes 2 agronomists, 2 agro-technicians, one animal husbandry officer, 2 hydro-technical engineers, and one civil engineer.

and to work with the children as a sort of social director." We

are told that this is a full-time political and propaganda job.

They tell me that women laborers may retire at 55 and men at

60 or earlier on account of health. We are told that when a laborer

retires the size of his pension is 80 percent of the average number

of labor-day units of the previous four years. A young man, hurt

on the farm and unable to work, would get a pension calculated in

the same way.

The farm has six schools of which two are 10-year schools,

attended by 1,500 children. The farm has a nursery, hospital, and

a newly completed new clubhouse.

Last year 4,440 tons of cotton were delivered at a price of

4,800 rubles per ton including bonuses for exceeding the plan. Then

we are told that total gross income is 17,620,000 rubles. According

to my information yesterday from the state farm they had 1,800 rubles

per ton. (Added later: This figure of 4,800 rubles must be seriously

in error, yet Mr. Bulik got the same figure. Likely the correct

figure is 1,800 or a bit more.)

This farm has 20,000 mulberry trees. Last year they delivered 27 tons

of silkworm cocoons. The silkworms are produced in the houses of the

individual farmers. They are paid so many labor-day units for the

cocoons. Now I'm told that three brigades handle the silkworms. Each

one has a special "agronomist."

The staff includes 2 agronomists, 2 agro-technicians, one animal

husbandry officer, 2 hydro-technical engineers, and one civil engineer.

With four other collectives, a joint hydro-electric power station of 600 kilowatts has been built.

The farm builds houses for its families. Last year 40 homes were built and this year they will have 100 more new ones. The farm has an account of 10,000,000 rubles for construction. The farm builds the houses and the farmer pays back in 10 years by installments. Unfired brick houses cost 12,000 rubles, and those of fired brick 28,000 rubles. The loans bear no interest. If the purchaser becomes ill the committee may free him of further payments. The living space in one of these houses is 60 square meters in three rooms. Last year 15 percent of the farm income was put into the development of the farm and the rest divided. This year they will put in 20 percent.

When a collective farm borrows money from the agricultural bank they pay 2 percent interest.

They tell us about how they fertilize cotton: they apply 100 kilograms per hectare of P_2O_5 . Seventy-five percent is plowed down in the fall and 25 percent applied in two or three side dressings during growth.

They apply 100 kilograms of N out of which 25 percent is plowed down in the fall. The rest is added during the vegetative period, usually in two applications, sometimes in three. They use either ammonium nitrate or ammonium sulphate.

For the fields that have yellow leaves on the cotton they apply 30 kilograms of K_2O as potassium chloride.

With four other collectives, a joint hydro-electric power station of 600 kilowatts has been built. The farm builds houses for its families. Last year 40 houses were built and this year they will have 100 more new ones. The farm has an account of 10,000,000 rubles for construction. The farm builds the houses and the farmer pays back in 10 years by instalments. Unfired brick houses cost 12,000 rubles, and those of fired brick 28,000 rubles. The loans bear no interest. If the purchaser becomes ill the committee may free him of further payments. The living space in one of these houses is 60 square meters in three rooms. Last year 15 percent of the farm income was put into the development of the farm and the rest divided. This year they will put in 20 percent. When a collective farm borrows money from the agricultural bank they pay 2 percent interest. They tell us about how they fertilize cotton: they apply 100 kilograms per hectare of P_2O_5 . Seventy-five percent is plowed down in the fall and 25 percent applied in two or three side dressings during growth. They apply 100 kilograms of N out of which 25 percent is plowed down in the fall. The rest is added during the vegetative period, usually in two applications, sometimes in three. They use either ammonium nitrate or ammonium sulphate. For the fields that have yellow leaves on the cotton they apply 30 kilograms of K_2O as potassium chloride.

During the flowering period they apply a leaf spray of phosphatic fertilizer from planes. For the side dressings, they mix the nitrogen and phosphorus with dry, unpulverized farm manure. By July 20 they have normally completed fertilization.

On the "meadow" soils they irrigate 2 or 3 times during the vegetative period, and 5 to 8 times on the Sierozems. Rates vary from 800 to 1,000 cubic meters per hectare. The length of run is about 80 to 100 meters with furrows 50 centimeters apart on the Sierozem; whereas on the "meadow" soils they irrigate with every other furrow. The time of irrigation runs from 24 to 48 hours. The water table here is at 2 meters or more.

We walk out into the cotton fields and then drive around to other parts of the farm. I see some veiled women in very colorful dress but they don't want to be photographed. We see the nursery and then go to the livestock section. (K-2614)

The dairy barn is now clean and neat but I doubt that it is all the time. The feeding troughs are concrete, the floors for the cows are wooden, and the passageways are earth. The milking is done by machine. The cows have been running about 1,200 kilograms of milk each. Today they had 527 kilograms from 72 cows. (If they have a total of 160 milk cows there must be another brigade.) I'm not particularly impressed with this breed of cows. The manure is removed from the barn on a carrier on a track. There are also tracks for the fodder. The stalls have automatic watering dishes. It must be difficult to keep the barn clean.

During the flowering period they apply a leaf spray of phosphatic fertilizer from planes. For the side dressings, they mix the nitrogen and phosphorus with dry, unpulverized farm manure. By July 20 they

have normally completed fertilization.

On the "meadow" soils they irrigate 2 or 3 times during the vegetative period, and 5 to 8 times on the Stierozems. Rates vary from 800 to 1,000 cubic meters per hectare. The length of run is about 80 to 100 meters with furrows 50 centimeters apart on the Stierozem; whereas on the "meadow" soils they irrigate with every other furrow. The time of irrigation runs from 24 to 48 hours. The water

cable here is at 2 meters or more. We walk out into the cotton fields and then drive around to other

parts of the farm. I see some veiled women in very colorful dress but they don't want to be photographed. We see the nursery and then go

to the livestock section. (K-2614)

The dairy barn is now clean and neat but I doubt that it is all

the time. The feeding troughs are concrete, the floors for the cows

are wooden, and the passageways are earth. The milking is done by

machine. The cows have been running about 1,200 kilograms of milk

each. Today they had 527 kilograms from 72 cows. (If they have a

total of 160 milk cows there must be another brigade.) I'm not partic-

ularly impressed with this breed of cows. The manure is removed from

the barn on a carrier on a track. There are also tracks for the fodder.

The stalls have automatic watering dishes. It must be difficult to

keep the barn clean.



K-2614. August 12, 1958. South of Andizhan.
Barnyard of Sverdlov Collective Farm.



K-2615. August 12, 1958. South of Andizhan. Cotton field
on Sverdlov Collective Farm. A few mulberry trees.

K-2614. August 12, 1958. South of Andizhan.
Barnyard of Sverdlov Collective Farm.

K-2615. August 12, 1958. South of Andizhan. Cotton field
on Sverdlov Collective Farm. A few mulberry trees.

We see some more cotton fields, which I photograph (K-2615), and then return to the headquarters for lunch at 11:05. (K-2656; K-2616) A beautiful luncheon table has been set up under the trees. Of course we have the usual toasts and so on. These Uzbek people are very kindly and hospitable. (Yet I think I have broken a tooth with a big sand grain in the bread.)

We leave for the airport at 12:05 with flowers and gracious farewells. By making very long toasts we have been able to limit the intake of food and drink since Melnikov wants to be sure that we make the plane.

On the way back I try to photograph the curious escarpment I saw on the way out along the Sharakhan-Sai River. I still can't make up my mind about the geological age of this old dissected surface. The ridges between the gullies are cut back by the stream at a very steep angle of repose.

After all the hurrying we reach the airport with time to spare. Melnikov says that all of our transport here has been furnished gratis by the local Oblast. I note a great many small planes here on the ground.

One of my guides tells me a typical Russian joke: A member of a collective says, "We have a nice swimming pool where people swim and dive. The chairman has promised that next year we shall have water for the pool."

We see some more cotton fields, which I photograph (K-2615), and then return to the headquarters for lunch at 11:05. (K-2626; K-2616) A beautiful luncheon table has been set up under the trees. Of course we have the usual toasts and so on. These Uzbek people are very kindly and hospitable. (Yet I think I have broken a tooth with a big sand grain in the bread.)

We leave for the airport at 12:05 with flowers and gracious farewells. By making very long toasts we have been able to limit the intake of food and drink since Melnikov wants to be sure that we make the plane.

On the way back I try to photograph the curious escarpment I saw on the way out along the Sharakhan-Sai River. I still can't make up my mind about the geological age of this old dissected surface. The ridges between the gullies are cut back by the stream at a very steep angle of repose.

After all the hurrying we reach the airport with time to spare. Melnikov says that all of our transport here has been furnished gratis by the local Oblast. I note a great many small planes here on the ground.

One of my guides tells me a typical Russian joke: A member of a collective says, "We have a nice swimming pool where people swim and dive. The chairman has promised that next year we shall have water for the pool."



K-2656. August 12, 1958. Near Andizhan. Sverdlov
Collective Farm. Old men of the village.

We saw some more things today, which I photographed (K-2652).

and then went to the headquarters for lunch at 12:00. (K-2653)

K-2654: A beautiful landscape photo was taken on the way to the camp.

Of course we have the usual houses and so on.

are very

with

between

the for

we can

and on

make a

The first

step is

K-2655: August 12, 1958. Near Andizhan. Sverdlov Collective Farm. Old men of the village.

by the local district. I note a great many small places here on the

ground.

One of my guides tells me a typical Russian house is made of

a collective says, "We have a nice collective here where people live

and live. The chairman has promised that soon we shall have

water for the pool."

The wheels are in the air. The landscape is very green. There are many villages along the roads. The combination of green fields and of mulberry trees make a pleasing scene from the air. The valley must be very heavily irrigated but when seen from the air it is not obvious.



The wheels are down at 2:15 p.m. K-2616. August 12, 1958. South of Andizhan. A small Uzbek citizen. Then we take a

are. I buy a silk scarf, a pair of shoes.

Although some shops and bazaars are open, the goods are not at all well displayed. The prices are very expensive and most goods are handmade. The local handicraft articles are very good.

Uzbek citizen.
K-2616. August 12, 1958. South of Andizhan. A small

The wheels are in the air for Tashkent at 1:06 p.m. There are many villages along the roads. This combination of cotton and rows of mulberry trees make a pleasing view from the air. This part of the valley must be very heavily populated but after some 20 or 30 miles the villages are smaller and further apart. The fields are mottled with saline areas. We were certainly shown the best areas. Out 30 to 40 miles salinity is very bad indeed where we fly but the land looks good to the south. I was told that during early irrigation all the drainage water with salt was allowed to accumulate in a depression. It is said that parts of this saline area are being reclaimed and I see ditches in saline areas having no crop at all. Soon after flying over some wasteland we are over good country with many villages and few evidences of salt. We cross the Kara Darya River and come near a city that may be Kokand. The soil becomes poorer even as we cross the Syr-Darya River near a large water-storage area.

The plane rolls and jerks as we go over the hills to Tashkent.

The wheels are down at 2:10 p.m. I go to the hotel and clean up. Then we take a short walk along Karl Marx Street where the main shops are. I buy a silk scarf, a map of Uzbekistan, and a small print.

Although some shops and department stores are better than others, goods are not at all well displayed. Most second quality material is very expensive and one sees few things of first quality. Only a few local handicraft articles are offered. Perhaps cottage industries

The wheels are in the air for Tashkent at 1:00 p.m. There are many villages along the roads. This combination of cotton and rows of mulberry trees make a pleasing view from the air. This part of the valley must be very heavily populated but after some 20 or 30 miles the villages are smaller and further apart. The fields are mottled with saline areas. We were certainly shown the best areas. Out 30 to 40 miles salinity is very bad indeed where we fly but the land looks good to the south. I was told that during early irrigation all the drainage water with salt was allowed to accumulate in a depression. It is said that parts of this saline area are being reclaimed and I see ditches in saline areas having no crop at all. Soon after flying over some wasteland we are over good country with many villages and few evidences of salt. We cross the Kara Darya River and come near a city that may be Kokand. The soil becomes poorer even as we cross the Syr-Darya River near a large water-storage area.

The plane rolls and jerks as we go over the hills to Tashkent. The wheels are down at 2:10 p.m. I go to the hotel and clean up. Then we take a short walk along Karl Marx Street where the main shops are. I buy a silk scarf, a map of Uzbekistan, and a small print.

Although some shops and department stores are better than others, goods are not at all well displayed. Most second quality material is very expensive and one sees few things of first quality. Only a few local handicraft articles are offered. Perhaps cottage industries

never flourished much; perhaps they are being discouraged; or perhaps people do not buy them. In this morning, I walk around the main The costume jewelry is very poor but not cheap. Real jewelry is very expensive. Since all prices are fixed, and the same in all stores, there is little incentive for attractive displays. Yet the shops and the department store I visit are very crowded with customers.

Tashk We are back to the hotel for dinner and early to bed. Tomorrow promises to be a very long hard day. From loose and seems not to have been cultivated, at least for a great many years.

I take the samples 4 inches deep. The soil is a brown (10YR 3/3) silt loam. The surface one inch is slightly platy. The soil is generally firm, but easy friable to moderate granular. I also take a sample of the vegetation. (K-2517)

We are back at the hotel at 11:05, pack, change our clothes, and make ready for a final conference with our Tashkent hosts.

They tell us that it is planned to irrigate 2 million hectares of new soil in the USSR by 1965 of which 700,000 hectares are in Uzbekistan. These hectares are mostly salty. The reclamation process goes through 4 main steps: (1) Removal of weeds and grass, (2) leveling, (3) deep plowing with moldboards, and (4) division into plots of .25 hectares surrounded with bunds that are 30 to 40 centimeters high. Each plot is separately supplied with water. They do not run water from one plot to another. This required 40 liters per second into each plot to flood quickly. At slower rates, more total water is required. The leaching is done in cooler weather, usually in September and October.

never flourished much; perhaps they are being discouraged; or perhaps people do not buy them.

The costume jewelry is very poor but not cheap. Real jewelry is very expensive. Since all prices are fixed, and the same in all stores, there is little incentive for attractive displays. Yet the shops and the department store I visit are very crowded with customers. We are back to the hotel for dinner and early to bed. Tomorrow promises to be a very long hard day.

All the drainage water with which we are allowed to wash is in a depression. It is said that parts of this valley are the best in the world and I see evidence in the water. The water is very good and after flying over the valley we see over good country with many villages and few evidences of war. We cross the Yangtze River and come near a city that may be Hsichang. The hills become more and more the Yangtze River has a large water-transportation system.

The plane takes us over the hills to Hsichang. The plane is down at 2:30 p.m. I go to the hotel and then to the Yangtze River. I take a short walk along the river and see many things. I buy a silk scarf, a bag of Hsichang, and a small bottle. Although some shops and department stores are better than others goods are not at all well displayed. That is, goods are not very expensive and are very few things of first quality. Only a few local handicraft articles are offered. Perhaps some of these

August 13

Unhappily, I am up early again this morning. I walk around the main square for the last time. The sky is cloudless and this promises to be a hot day in Tashkent.

About 10 a.m. one of our hosts goes with Dr. Cline and me to collect a surface soil of Sierozem. About 12 kilometers northeast of Tashkent we take a surface sample from an old mesa that is now under dry natural vegetation. The soil is from loess and seems not to have been cultivated, at least for a great many years.

I take the samples 4 inches deep. The soil is a brown (10YR 5/3) silt loam. The surface one inch is slightly platy. The soil is generally firm, but easy friable to moderate granular. I also take a sample of the vegetation. (K-2617)

We are back at the hotel at 11:05, pack, change our clothes, and make ready for a final conference with our Tashkent hosts.

They tell us that it is planned to irrigate 2 million hectares of new soil in the USSR by 1965 of which 700,000 hectares are in Uzbekistan. These hectares are mostly salty. The reclamation process goes through 4 main steps: (1) Removal of weeds and grass, (2) leveling, (3) deep plowing with moldboards, and (4) division into plots of .25 hectares surrounded with bunds that are 30 to 40 centimeters high. Each plot is separately supplied with water. They do not run water from one plot to another. This required 40 liters per second into each plot to flood quickly. At slower rates, more total water is required. The leaching is done in cooler weather, usually in September and October.

August 13

Unhappily, I am up early again this morning. I walk around the main square for the last time. The sky is cloudless and this promises to be a hot day in Tashkent.

About 10 a.m. one of our hosts goes with Dr. Cline and me to collect a surface soil of Sterozem. About 12 kilometers northeast of Tashkent we take a surface sample from an old mesa that is now under dry natural vegetation. The soil is from loess and seems not to have been cultivated, at least for a great many years.

I take the samples 4 inches deep. The soil is a brown (10YR 5/3) silt loam. The surface one inch is slightly platy. The soil is generally firm, but easy friable to moderate granular. I also take a sample of the vegetation. (K-2617)

We are back at the hotel at 11:05, pack, change our clothes, and make ready for a final conference with our Tashkent hosts.

They tell us that it is planned to irrigate 2 million hectares of new soil in the USSR by 1965 of which 700,000 hectares are in Uzbekistan. These hectares are mostly salty. The reclamation process goes through 4 main steps: (1) Removal of weeds and grass, (2) leveling, (3) deep plowing with moldboards, and (4) division into plots of .25 hectares surrounded with bunds that are 30 to 40 centimeters high. Each plot is separately supplied with water. They do not run water from one plot to another. This required 40 liters per second into each plot to flood quickly. At slower rates, more total water is required.

The leaching is done in cooler weather, usually in September and October.

They check the chlorophyll test and measure the water content
in the first meter of soil profile at 10-15 cm. The water content
should be lower in salt than in good soil.



Alfalfa

K-2617. August 13, 1958. 12 km. east of Tashkent. Site of
Cotto Sierozem surface soil sample. Dr. Cline in foreground.

Oats and barley

Mangel-wurzwie

Sunflowers

They have tried to irrigate these fields with water from the Tashkent

of salt per liter. They find the salt content is 10-15 g/l. in the soil

leached soils with good drainage, but the water is still

try to leach these fields every year in the winter when water is

K-2617. August 13, 1958. 12 km. east of Tashkent. Site of Stereom surface soil sample. Dr. Gline in foreground.

They check the chloride ion and require a maximum of .01 percent in the first meter of soil prior to sowing. The underground water should be lower in salt than 10 grams per liter.

Through research and experience they have developed curves for the various soil conditions used to predict the water needed. The amount required varies from 3,000 cubic meters for sandy soils with relatively low water tables to 25,000 cubic meters per hectare for clay soils with shallow water tables. Solonchaks requiring 25,000 cubic meters are used for rice. The rice is planted after 2 or 3 floodings within the bunds. But when the chloride ion drops below .01 percent, any crop may be grown. Sunflowers are quite tolerant of salt; they can grow with .07 percent chloride ion in the first meter. Mangel-wurzels can endure .06 percent. According to their experience they give the following upper limits for several crops:

Crop	Percent chloride ion
Alfalfa	.01
Cotton and grain sorghum	.045
Oats and barley	.02 to .03
Mangel-wurzels	.06
Sunflowers	.07

They have tried irrigated cotton with water having up to 7 grams of salt per liter. They find they can grow to 4 to 5 tons on well leached soils with good drainage systems and yields hold up. They try to leach these fields every year or two with river water.

They check the chloride ion and require a maximum of .01 percent in the first meter of soil prior to sowing. The underground water should be lower in salt than 10 grams per liter.

Through research and experience they have developed curves for the various soil conditions used to predict the water needed. The amount required varies from 3,000 cubic meters for sandy soils with relatively low water tables to 25,000 cubic meters per hectare for clay soils with shallow water tables. Solonchaks requiring 25,000 cubic meters are used for rice. The rice is planted after 2 or 3 floodings within the bunds. But when the chloride ion drops below .01 percent, any crop may be grown. Sunflowers are quite tolerant of salt; they can grow with .07 percent chloride ion in the first meter. Mangel-wurzel can endure .06 percent. According to their experience they give the following upper limits for several crops:

Crop	Percent chloride ion
Alfalfa	.01
Cotton and grain sorghum	.045
Oats and barley	.02 to .03
Mangel-wurzel	.06
Sunflowers	.07

They have tried irrigated cotton with water having up to 7 grams of salt per liter. They find they can grow to 4 to 5 tons on well leached soils with good drainage systems and yields hold up. They try to leach these fields every year or two with river water.

They have reclaimed Solonchaks with as much as 13 percent salt and after leaching had 4 tons of cotton per hectare. Here 1 cubic meter of water takes out 3 to 15 kilograms of salt, depending on the soil.

There follows some discussion. It seems to us that they apply much more water than necessary if adequate drainage were provided. They measure the water that goes onto the farm but we question how it is really divided among the fields.

We have lunch, go out to the airport in the little bumpy bus, and then wait for the plane. Here at the last minute I am given a soil map. This is a copy of one that I had wanted to photograph at the Akkavak Station; but it is not the one I most wanted.

The wheels of this very hot little plane are off the ground for Alma-Ata at 3:40 p.m.

In 7 minutes the good cropland fades out except in favored places. I see some cereal on dryland and some inadequately irrigated soils except for good irrigation around the village sites. At 3:55 there is poor wheat farming and very little irrigation. By 4:01 the land is too dissected for grain except in small patches. We pass the outliers of the mountains to the south. The rocks are folded. Probably they are sedimentary. Here and there I see some grain fields but rather poor small villages with irrigated family plots. Both dry farming and irrigation improve for a ways but they are very patchy. I see flat-topped elongated remnants of older landscapes that have on them irregular stubble fields. The entrenched streams give a very

They have reclaimed Solonchaks with as much as 13 percent salt and after leaching had 4 tons of cotton per hectare. Here 1 cubic meter of water takes out 3 to 15 kilograms of salt, depending on the soil.

There follows some discussion. It seems to us that they apply much more water than necessary if adequate drainage were provided. They measure the water that goes onto the farm but we question how it is really divided among the fields.

We have lunch, go out to the airport in the little pump bus, and then wait for the plane. Here at the last minute I am given a soil map. This is a copy of one that I had wanted to photograph at the Akkavsk Station; but it is not the one I most wanted. The wheels of this very hot little plane are off the ground for

Alma-Ata at 3:40 p.m.

In 7 minutes the good cropland fades out except in favored places. I see some cereal on dryland and some inadequately irrigated soils except for good irrigation around the village sites. At 3:55 there is poor wheat farming and very little irrigation. By 4:01 the land is too dissected for grain except in small patches. We pass the outliers of the mountains to the south. The rocks are folded. Probably they are sedimentary. Here and there I see some grain fields but rather poor small villages with irrigated family plots. Both dry farming and irrigation improve for a ways but they are very patchy. I see flat-topped elongated remnants of older landscapes that have on them irregular stubble fields. The entrenched streams give a very

complex pattern of grazing land and cereals with a bit of irrigation in favored places, especially at village sites.

At 4:16 p.m. we begin to fly over low jagged mountains with poor cover, then another valley, low mountains, and still another valley.

We pass Dzhambul. I see the Ala-Tau Mountains to the south that have snow on them. They are said to run up to 3,000 meters.

As we go on this mountain area gets much greener and would seem to have good grazing. The mountains are said to be a part of the Chungur Range with peaks up to 1,380 meters.

The wheels are down at 5:19 in Frunze. We have time enough for tea. The wheels are up again at 6:02.

We pass over irrigated fields. I am not sure of all the crops, but I think I see cereals, fallow, meadow, corn, sunflowers, and rice.

The soils are darker brown. At 6:10 we are over strongly rolling to hilly grazing land with cereals on the mesas and at the margins in favored places.

We come down for Alma-Ata, the fields have corn, sunflowers, and meadow with grazing cattle. There are beautiful snow-capped mountains just south of the city. (K-2618) At the moment the area is wet and seems to be well irrigated with water from the mountains.

The wheels are down at 6:48 in the middle of a muddy airport that is being rebuilt. The rainfall is fairly good here and runs up to 800 millimeters.

complex pattern of grazing land and cereals with a bit of irrigation in favored places, especially at village sites.

At 4:16 p.m. we begin to fly over low jagged mountains with poor cover, then another valley, low mountains, and still another valley.

We pass Dzhambul. I see the Altai Mountains to the south that have snow on them. They are said to run up to 3,000 meters.

As we go on this mountain area gets much greener and would seem to have good grazing. The mountains are said to be a part of the Chugur Range with peaks up to 1,380 meters.

The wheels are down at 5:19 in Frunze. We have time enough for tea. The wheels are up again at 6:02.

We pass over irrigated fields. I am not sure of all the crops, but I think I see cereals, fallow, meadow, corn, sunflowers, and rice. The soils are darker brown. At 6:10 we are over strongly rolling to hilly grazing land with cereals on the mesas and at the margins in favored places.

We come down for Alma-Ata, the fields have corn, sunflowers, and meadow with grazing cattle. There are beautiful snow-capped mountains just south of the city. (K-2618) At the moment the area is wet and seems to be well irrigated with water from the mountains.

The wheels are down at 6:48 in the middle of a muddy airport that is being rebuilt. The rainfall is fairly good here and runs up to 800 millimeters.

We have quite a wait in this airport without food or tea.
Finally we get into a battered old plane for the trip to Alma-Ata.
The wheels are up at 7:34 p.m. Recent rains have soaked the ground.
For 7 or 8 miles the land is cut up with meandering streams.
There are many gulches and the landscape is very ugly.
We have already over the mountains and see several peaks.
The relief suggests the Caucasus.

About 8:00 p.m.
but most is dark.

At 8:18 p.m.
the minimum temperature is -10°C.
There is a fine view
of craters and calderas.



K-2618. August 13, 1958. Alma Ata. View from front of airport.

It is a terrible night. We cross the river at 8:35 and the local relief is very ugly.
lava flows. Now we have nothing ahead but the long winding road.
this old plane - hours in what I was back at home, and even then
to stay at home.

At 9:25 we pass over Baitash then over the mountains to Alma-Ata at
10:45. We are taken to an extremely hot little dining room where
much of which we share with a swarm of flies. We are then taken
to the plane and wait while workers put in a large number of very
heavy boxes. It would seem that this plane must be heavily loaded.

K-2618. August 13, 1958. Alma Ata. View from
front of airport.

We have quite a wait in this airport without food or tea. Finally we get into a battered old plane for the trip to Akmolinsk. The wheels are up at 7:54 p.m. Recent rains have soaked this area. For 7 or 8 miles the land is cut up with meandering streams that have many gullies running back from their banks. By 8:02 we are already over wasteland and it is most too dark to see clearly. I see several corrals so there must be some grazing animals. The mezzo-relief suggests a windswept hard rock and cover sands.

About 8:06 I see a few fields of cereal on rather bumpy land but most is undulating. As we go on, the fields become fewer.

At 8:18 we pass Kurtu. The rainfall must have dropped below the minimum for crops. The Ili River is a meandering braided one. There is a fairly strong mezzo-relief with outcrops of rock or possibly of croute calcaire.

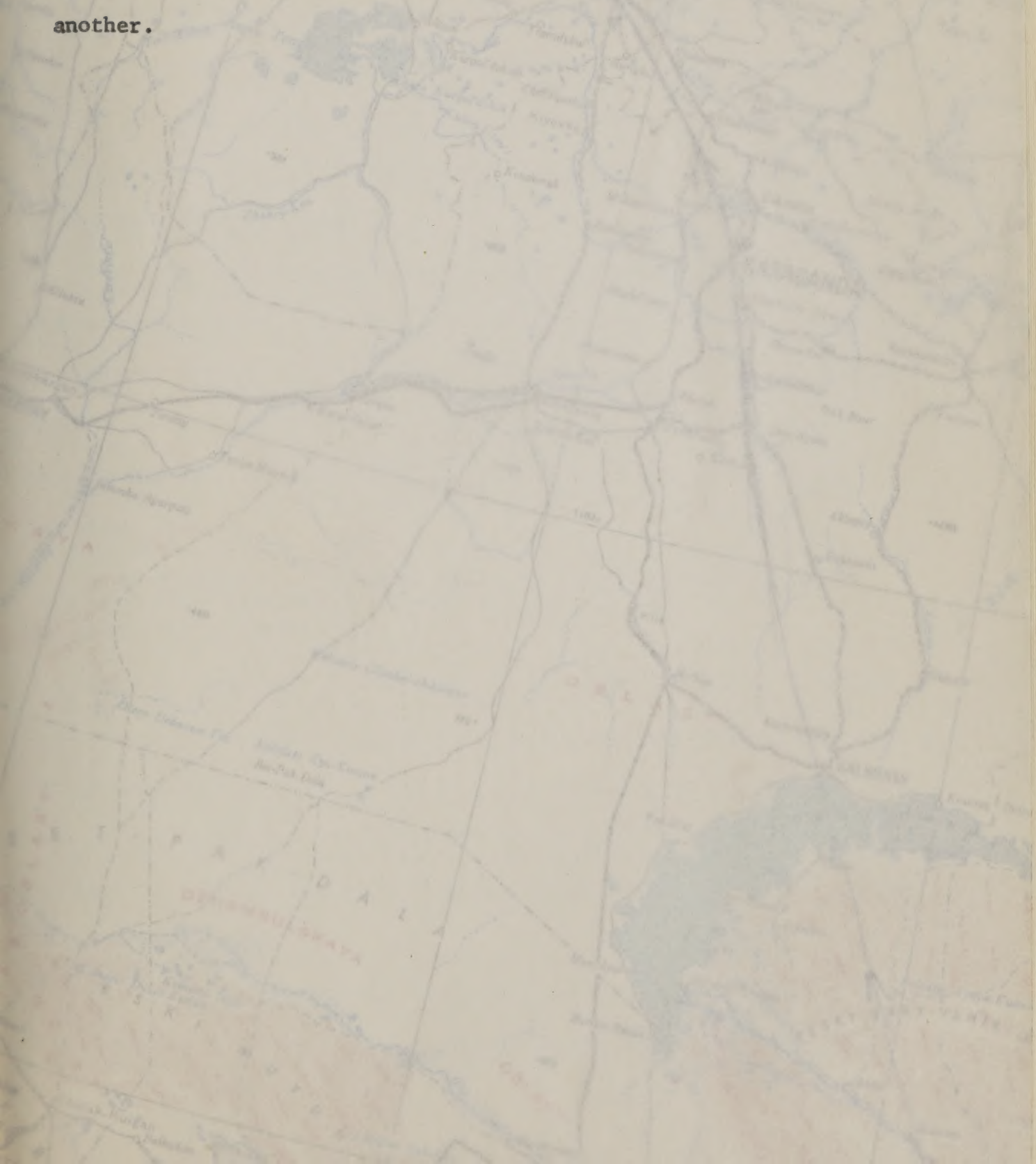
It is a terrible pity that we must pass over this great area at night. We cross the river at 8:35 and the local relief suggests old lava flows. Now we have nothing ahead but the long grinding hours in this old plane - hours to wish I were back at home, and once there, to stay at home.

At 9:25 we pass over Balkhash then come down in Karaganda at 10:45. We are taken to an extremely hot little dining room for food, much of which we share with a swarm of flies. We are soon called back to the plane and wait while workmen put in a large number of extremely heavy boxes. It would seem that this plane must be terribly overloaded.

We have quite a wait in this airport without food or tea. Finally we get into a battered old plane for the trip to Akmolinsk. The wheels are up at 7:54 p.m. Recent rains have soaked this area. For 7 or 8 miles the land is cut up with meandering streams that have many gullies running back from their banks. By 8:02 we are already over wasteland and it is most too dark to see clearly. I see several corrals so there must be some grazing animals. The meso-relief suggests a windswept hard rock and cover sands. About 8:06 I see a few fields of cereal on rather bumpy land but most is undulating. As we go on, the fields become fewer. At 8:18 we pass Karta. The rainfall must have dropped below the minimum for crops. The Il River is a meandering braided one. There is a fairly strong meso-relief with outcrops of rock or possibly of croute calcare. It is a terrible pity that we must pass over this great area at night. We cross the river at 8:35 and the local relief suggests old lava flows. Now we have nothing ahead but the long grinding hours in this old plane - hours to wish I were back at home, and once there, to stay at home. At 9:25 we pass over Balkhash then come down in Karaganda at 10:45. We are taken to an extremely hot little dining room for food, much of which we share with a swarm of flies. We are soon called back to the plane and wait while workmen put in a large number of extremely heavy boxes. It would seem that this plane must be terribly overloaded.

We get into the plane at 11:30 p.m., but nothing happens. We just sit. For the local citizens, I hope this is not the God forsaken place it seems to be.

The wheels are up at 11:58. And thus one day passes into another.



279

We get into the plane at 11:30 p.m., but nothing happens. We just sit. For the local citizens, I hope this is not the God forsaken place it seems to be. 11:45 p.m. The plane has not moved this time.

For The wheels are up at 11:58. And thus one day passes into

another. The wheels are up at 11:58. And thus one day passes into

another. The wheels are up at 11:58. And thus one day passes into

another. The wheels are up at 11:58. And thus one day passes into

another. The wheels are up at 11:58. And thus one day passes into

another. The wheels are up at 11:58. And thus one day passes into

another. The wheels are up at 11:58. And thus one day passes into

another. The wheels are up at 11:58. And thus one day passes into

another. The wheels are up at 11:58. And thus one day passes into

another. The wheels are up at 11:58. And thus one day passes into

another. The wheels are up at 11:58. And thus one day passes into

another. The wheels are up at 11:58. And thus one day passes into

another. The wheels are up at 11:58. And thus one day passes into

another. The wheels are up at 11:58. And thus one day passes into

another. The wheels are up at 11:58. And thus one day passes into

another. The wheels are up at 11:58. And thus one day passes into

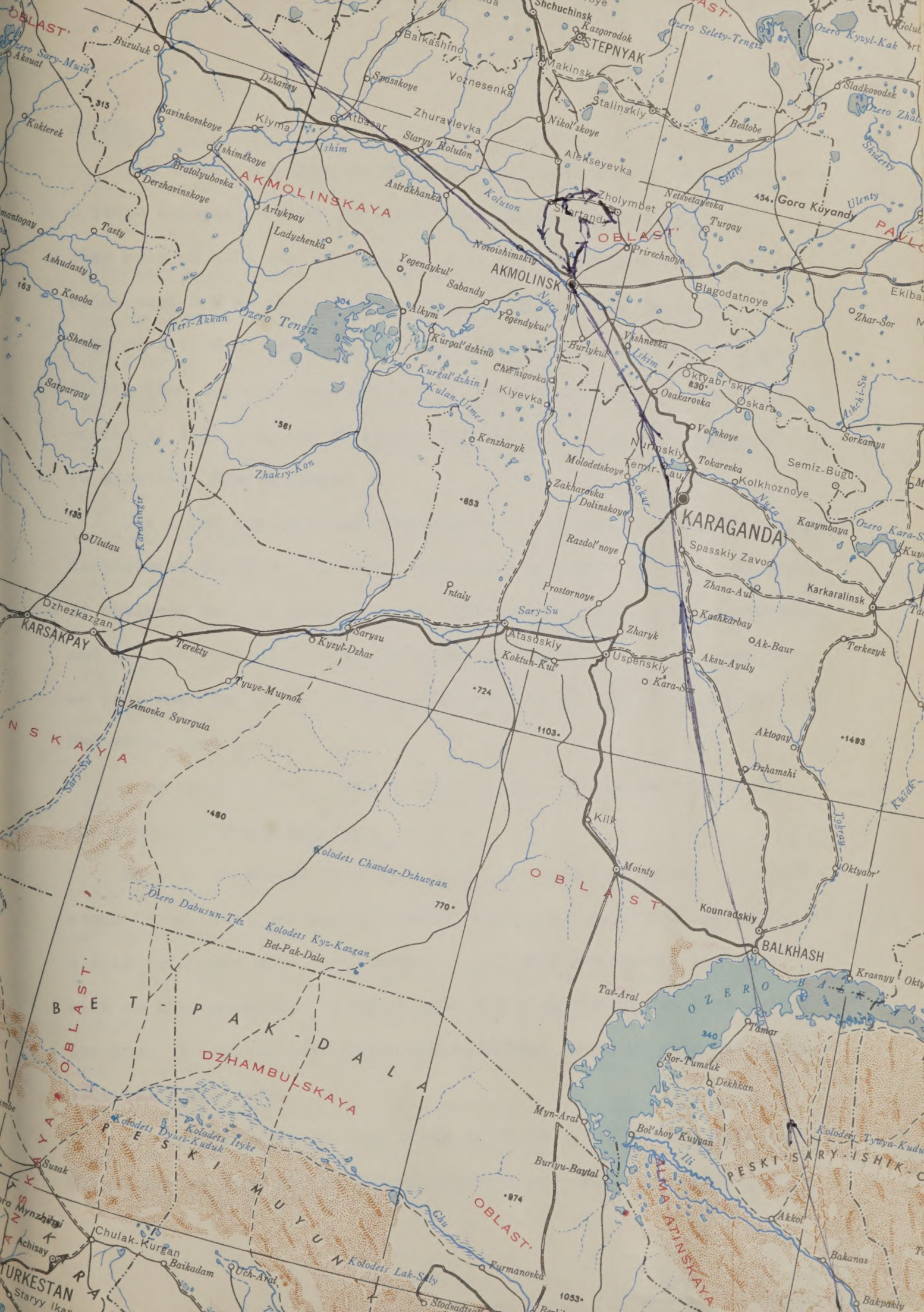
another. The wheels are up at 11:58. And thus one day passes into

another. The wheels are up at 11:58. And thus one day passes into

another. The wheels are up at 11:58. And thus one day passes into

another. The wheels are up at 11:58. And thus one day passes into

another. The wheels are up at 11:58. And thus one day passes into



August 14

temperatures are about -40°C. They have occasional summer frosts.

The wheels are down at Akmolinsk in Kazakhstan at 12:42 a.m.
The last one was in 1946.

A large delegation from the local Akmolinskaya Oblast meets us.

I see that we are in the plain of either brown or chestnut soils.

They help us take out our baggage that is loaded into cars. We
treasures except for a few old groves and a few young shelterbelts.

drive east and go only through the edge of the city on a terrible
The Oblast has 15,000,000 hectares of which about 4.6 million are

road to a kind of small camp. There is a central building for the
under crops. They have 3.6 million hectares of wheat and 4 million

dining room and offices, and little cottages filled with beds. We
hectares of other crops. Plowable land in perennial grass is not

arrive at 1:30 a.m. and discover that we must go to a banquet within
included. In 1954 they had only 1,100,000 hectares of cropland.

10 minutes! What a place!

On the cultivated land they have about 1 year of fallow with 2 to

The chief agricultural administrator for the Oblast is Mr. Sergei
3 years of grain. On the virgin soils they start out with spring

Nikolaevich Strukov. He seems like quite a tough old bird. He acts
wheat for 3 or 4 years.

as chairman for the usual banquet, with much urging to drink, toasts,
I see some thickly-sown crops for fodder. The soils are slightly

and all the rest of it. Mr. Melnikov had been ill on the plane; but
reddish-brown light chestnuts (brown soils) with considerable solonchik

he says now that he feels fine from taking salt and vodka! I get to
influence and some spots of solonchik. I am told they also grow a

bed about 3:20 a.m.

little winter rye for green fodder but only enough rye is harvested

I am up at 7 a.m., and not very bright. It is partly cloudy,
to give them seeds. They also have some oats and millet.

but generally sunny and warm.

As we cross the railroad I notice a great many box cars. They

Even at breakfast this morning we are urged to drink. Everyone
tell me that they now have 11,000 of these in reserve for storing

seems tired, even our hosts. These hours are ridiculous but apparently
and shipping grain.

all is in accord with local custom. Mr. Melnikov is too ill to go
They use special machines for ridging the snow in the fields.

with us this morning. He is in pain and a physician has been called
This is done two or three times in the winter in order to get a layer

for him. I doubted last night the medicinal value of salt and vodka,
of 50 to 60 centimeters of snow. In the fall they do not disturb the

especially the vodka.

stubble and cultivation is said to be done by a modified Canadian

We finally leave for the field at 10:30 a.m. The rainfall in this
machine. Because of June droughts they dare not sow the wheat early.

Oblast varies from 250 to 320 millimeters per year. Minimum winter
They sow usually in the latter part of May since most of their rain

August 14

The wheels are down at Akmolinsk in Kazakhstan at 12:42 a.m. A large delegation from the local Akmolinskaya Oblast meets us. They help us take out our baggage that is loaded into cars. We drive east and go only through the edge of the city on a terrible road to a kind of small camp. There is a central building for the dining room and offices, and little cottages filled with beds. We arrive at 1:30 a.m. and discover that we must go to a banquet within 10 minutes! What a place!

The chief agricultural administrator for the Oblast is Mr. Sergei Nikolaevich Strukov. He seems like quite a tough old bird. He acts as chairman for the usual banquet, with much urging to drink, toasts, and all the rest of it. Mr. Melnikov had been ill on the plane; but he says now that he feels fine from taking salt and vodka! I get to bed about 3:30 a.m.

I am up at 7 a.m., and not very bright. It is partly cloudy,

but generally sunny and warm.

Even at breakfast this morning we are urged to drink. Everyone seems tired, even our hosts. These hours are ridiculous but apparently all is in accord with local custom. Mr. Melnikov is too ill to go with us this morning. He is in pain and a physician has been called for him. I doubted last night the medicinal value of salt and vodka, especially the vodka.

We finally leave for the field at 10:30 a.m. The rainfall in this

Oblast varies from 250 to 320 millimeters per year. Minimum winter

temperatures are about -40°C . They have occasional summer frosts. The last one was in 1946.

I see that we are in the plain of either Brown or Chestnut soils, treeless except for a few old groves and a few young shelterbelts. The Oblast has 15,000,000 hectares of which about 4.6 million are under crops. They have 3.6 million hectares of wheat and 4 million hectares of other crops. Plowable land in perennial grass is not included. In 1954 they had only 1,100,000 hectares of cropland. On the cultivated land they have about 1 year of fallow with 2 to 3 years of grain. On the virgin soils they start out with spring wheat for 3 or 4 years.

I see some thickly-sown corn for fodder. The soils are slightly reddish-brown light Chestnuts (Brown soils) with considerable solonetzic influence and some spots of Solonetz. I am told they also grow a little winter rye for green fodder but only enough rye is harvested to give them seeds. They also have some oats and millet.

As we cross the railroad I notice a great many box cars. They tell me that they now have 11,000 of these in reserve for storing and shipping grain.

They use special machines for ridging the snow in the fields. This is done two or three times in the winter in order to get a layer of 50 to 60 centimeters of snow. In the fall they do not disturb the stubble and cultivation is said to be done by a modified Canadian machine. Because of June droughts they dare not sow the wheat early. They sow usually in the latter part of May since most of their rain

temperatures are about -40°C . They have occasional summer frosts.

The last one was in 1946.

I see that we are in the plain of either Brown or Chestnut soils.

There are except for a few old groves and a few young shelterbelts.

The Oblast has 12,000,000 hectares of which about 4.6 million are

under crops. They have 3.6 million hectares of wheat and 4 million

hectares of other crops. Plowable land in perennial grass is not

included. In 1954 they had only 1,100,000 hectares of cropland.

On the cultivated land they have about 1 year of fallow with 2 to

3 years of grain. On the virgin soils they start out with spring

wheat for 3 or 4 years.

I see some thickly-sown corn for fodder. The soils are slightly

reddish-brown light Chestnuts (Brown soils) with considerable solonchaks

influence and some spots of Solonchaks. I am told they also grow a

little winter rye for green fodder but only enough rye is harvested

to give them seeds. They also have some oats and millet.

As we cross the railroad I notice a great many box cars. They

tell me that they now have 11,000 of these in reserve for storing

and shipping grain.

They use special machines for ridging the snow in the fields.

This is done two or three times in the winter in order to get a layer

of 50 to 60 centimeters of snow. In the fall they do not disturb the

stubble and cultivation is said to be done by a modified Canadian

machine. Because of June droughts they dare not sow the wheat early.

They sow usually in the latter part of May since most of their rain

comes in June and early July. This year they expect an average of 1.3 to 1.4 tons of wheat per hectare. Oats are expected to be somewhat more. They tell me that this single Oblast produces one-half as much wheat as the Ukraine.

I see a large group of cattle out to pasture. In places I see some evidence of salt in the low ground and of Solonetz.

I am told that only small plots of vegetables are irrigated. In the whole Oblast 232,000 hectares are irrigated by flooding and 5,000 by furrows.

As we enter the suburbs of Akmolinsk, I see many of the old-style wooden houses, mostly unpainted, with carvings on the window frames, the shutters and the boards just under the eaves. There are many low one-story, mud-brick and mud-plaster houses in the town. The roads and streets are either very muddy or, as now, very rough and dusty. I see a few new two-story apartments of cement blocks. Certainly this is an unattractive city. (Under statement!) We drive through just the edge of the city and do not see the main part. (I get the odor of oil as from a cracking plant.)

We go generally west and then northwest in the direction of Shortandy. I see a few young shelterbelts, some goats, and quite a few cattle. We pass a large field of corn and stop on the collective farm called "Dawning." This corn for silage is about $6\frac{1}{2}$ feet high. (K-2657) Next to the corn are potatoes, which they expect to yield about 15 to 18 tons per hectare. We also see good oats and good wheat. They expect the wheat to yield 1.4 tons per hectare.

comes in June and early July. This year they expect an average of 1.3 to 1.4 tons of wheat per hectare. Oats are expected to be somewhat more. They tell me that this single Oblast produces one-half as much wheat as the Ukraine.

I see a large group of cattle out to pasture. In places I see some evidence of salt in the low ground and of Solonchaks. I am told that only small plots of vegetables are irrigated. In the whole Oblast 232,000 hectares are irrigated by flooding and 5,000 by furrows.

As we enter the suburbs of Akmolinsk, I see many of the old-style wooden houses, mostly unpainted, with carvings on the window frames, the shutters and the boards just under the eaves. There are many low one-story, mud-brick and mud-plaster houses in the town. The roads and streets are either very muddy or, as now, very rough and dusty. I see a few new two-story apartments of cement blocks. Certainly this is an unattractive city. (Under statement!) We drive through just the edge of the city and do not see the main part.

(I get the odor of oil as from a cracking plant.)

We go generally west and then northwest in the direction of Shortandy. I see a few young shelterbelts, some goats, and quite a few cattle. We pass a large field of corn and stop on the collective farm called "Dawning." This corn for silage is about 6 1/2 feet high. (K-2657) Next to the corn are potatoes, which they expect to yield about 15 to 18 tons per hectare. We also see good oats and good wheat. They expect the wheat to yield 1.4 tons per hectare.



K-2657. August 14, 1958. North of Akmolinsk. Corn for silage on dark Chestnut soil (loam). (S. N. Strukov).

...to him and my 10/1. This was the first time he was
of 1.5 to 2.0 mm of water per centimeter. They are expected to
be expected. They tell me that this is a very good
one-half as much as the others.

K-2657

see some

K-2657

roads and

K-2657. August 14, 1958. North of Akmolinsk. Corn for
silage on dark Chestnut soil (loam). (S. N. Strikov).

(I got the edge of all the trees a crawling plant.)
We go generally west and then northeast to the station of
Zhuravsky. I see a few young plantations, some of them
a few cattle. We pass a large field of corn and then the yellow-
five have called "yellow". There are no other plants in field.
High. (K-1057) Went to the north and west, where they expect to
find about 15 to 20 mm of water. We also saw some good
good water. They expect the water to yield 1.5 mm per centimeter.

(K-2619) They seed 110 kilograms per hectare. The stand looks a bit thin to me. The wheat here is a bit green yet. They will windrow it and then follow with a pickup combine harvester. In this way they avoid shattering and the extra work of drying the grain.

These crops
the soils of west
have made no at

I see one very
ing wild Solonch

We go on to
of Solonetz and

Because of
months. They use

couchgrass, corn stalks, and alfalfa silage. The
made between the two
with tractors and combine harvesters.

We pass a village with white, one-story houses. They have
some windows and the roofs are mostly flat. And then we see another
field of corn that is much more green than the previous one.

It would be my judgment that much of this Chestnut-Solonch
complex that they are carefully avoiding could be plowed and made
ready for crops without too much trouble.



K-2619. August 14, 1958. North of Akmolinsk.
Wheat on dark Chestnut soil. Around
1.4 tons per hectare. (Oblast agronomist).

K-2619. August 14, 1958. North of Akmolinsk.
Wheat on dark Chestnut soil. Around
1.4 tons per hectare. (Oblast agronomist).

(K-2619) They seed 110 kilograms per hectare. The stand looks a bit thin to me. The wheat here is a bit green yet. They will windrow it and then follow with a pickup combine harvester. In this way they avoid shattering and the extra work of drying the grain. These crops are on Chestnut loam that looks something like the soils of western North Dakota on smooth relief. So far they have made no attempt to reclaim lands with much Solonetz, although I see one very large wheat field that has some micro-relief suggesting mild Solonetz. We go on by large pasture areas with small, widely-spaced spots of Solonetz and some slight efflorescence on the ditch banks. Because of their winters here the cattle are fed for about six months. They use wild hay, some alfalfa, crested wheatgrass, sanfoin, couchgrass, straw, corn silage, and sunflower silage. The silage is made between two hay stacks about 5 to 6 meters apart. This is packed with tractors and covered with straw. We pass a village with small, low whitewashed houses. They have some windows and the roofs are nearly flat. And then we see another field of corn that is much less good than the previous one. It would be my judgment that much of this Chestnut-Solonetz complex that they are carefully avoiding could be plowed and made ready for crops without too much trouble.

(K-2619) They seed 110 kilograms per hectare. The stand looks a bit thin to me. The wheat here is a bit green yet. They will windrow it and then follow with a pickup combine harvester. In this way they avoid shattering and the extra work of drying the grain.

These crops are on Chestnut loam that looks something like the soils of western North Dakota on smooth relief. So far they have made no attempt to reclaim lands with much Solonchaks, although I see one very large wheat field that has some micro-relief suggesting mild Solonchaks.

We go on by large pasture areas with small, widely-spaced spots of Solonchaks and some slight efflorescence on the ditch banks. Because of their winters here the cattle are fed for about six months. They use wild hay, some alfalfa, crested wheatgrass, sainfoin, couchgrass, straw, corn silage, and sunflower silage. The silage is made between two hay stacks about 2 to 6 meters apart. This is packed with tractors and covered with straw.

We pass a village with small, low whitewashed houses. They have some windows and the roofs are nearly flat. And then we see another field of corn that is much less good than the previous one. It would be my judgment that much of this Chestnut-Solonchaks complex that they are carefully avoiding could be plowed and made ready for crops without too much trouble.

This Dawning Collective Farm has 24,000 hectares for crops out of a total of 56,000 hectares. Apparently we are just driving through. We pass a field of sunflowers that will not ripen but will be cut green for silage. The Administrator tells me at this point that they have 1,100,000 sheep in this Oblast and 550,000 cattle. Of these cattle 87,000 are cows, but only 55 percent of them are considered milk cows.

I stop to take a picture of a village in the Voroshilov Collective Farm. (K-2620) My guide tells me that this is a temporary brigade camp! Although it doesn't look very good these are obviously permanent homes. Near the houses are piles of manure bricks for fuel. I notice also a small wind-power electric station for the village and for a cattle barn. I am told they use diesel power when there is no wind. The many little ponds around here testify to recent rains.

We talk a bit about reclaiming Solonetz. Where they do it they start out with a heavy-duty tractor and disk and then plow to 40 centimeters without moldboards. The soil is fallowed for one year and then planted to perennial grasses, especially alfalfa and crested wheatgrass together. This is left to grow for 4 or 5 years and then the best parts are used for grain. It is too bad that they have no sulphur or gypsum to apply to these soils. Yet what is called Solonetz here we would call solonetzic Chestnut soil with a few spots of weakly developed Solonetz.

This Dawning Collective Farm has 24,000 hectares for crops out of a total of 56,000 hectares. Apparently we are just driving through. We pass a field of sunflowers that will not ripen but will be cut green for silage. The Administrator tells me at this point that they have 1,100,000 sheep in this Oblast and 250,000 cattle. Of these cattle 87,000 are cows, but only 25 percent of them are considered milk cows. I stop to take a picture of a village in the Voroshilov Collective Farm. (K-2620) My Guide tells me that this is a temporary brigade camp! Although it doesn't look very good these are obviously permanent homes. Near the houses are piles of manure bricks for fuel. I notice also a small wind-power electric station for the village and for a cattle barn. I am told they use diesel power when there is no wind. The many little ponds around here testify to recent rains. We talk a bit about reclaiming Solonchaks. Where they do it they start out with a heavy-duty tractor and disk and then plow to 40 centimeters without moldboards. The soil is fallowed for one year and then planted to perennial grasses, especially alfalfa and crested wheatgrass together. This is left to grow for 4 or 5 years and then the best parts are used for grain. It is too bad that they have no sulphur or gypsum to apply to these soils. Yet what is called Solonchaks here we would call solonchak Chestnut soil with a few spots of weakly developed Solonchaks.



K-2620. August 14, 1958. North of Akmolinsk. Village on Voroshilov Collective Farm.



K-2621. August 14, 1958. North of Akmolinsk. Site of surface sample of dark Chestnut soil. Virgin soil. Some solonetzic spots.

K-2621. August 14, 1958. North of Akmolinsk. Side of surface
sample of dark Chestnut soil. Virgin soil. Some
solonchak spots.

K-2620. August 14, 1958. North of Akmolinsk. Village on
Voroobinov Collective Farm.

We stop in the virgin steppe and I get a surface sample of the dark Chestnut soil to a 4-inch depth. (K-2621) This is a very dark grayish-brown (10YR 3/2) silt loam with fine granular structure. The top half-inch is slightly platy. The surface is nearly level and there are few slight depressions with Solonetz. I also take samples of the vegetation which includes mainly Festucae sulcata and Stipa tinctorum.

On this trip we are meandering on field roads somewhat east of the main road. We pass some low hills that seem to be outliers of hard, angular quartz. One might call part of it chert and I see some rosy quartz. In places the material is being blasted out for making gravel. But generally speaking, this area is covered with deep loess.

We look at first-year wheat after reclaiming the virgin Chestnut soil, which I believe will run two tons per hectare. (K-2622) Then I see them making hay from the virgin soil. They expect about 2.5 tons of this wild hay per hectare. I notice that they leave uncut strips to help hold the snow next year.

Now we are on the Unification Collective Farm. Last year they averaged 1.6 tons of wheat per hectare. This is a better year and they expect over 2 tons. Here, too, near the houses I see the manure bricks piled up for fuel. These villages look a bit bleak: what with the wind, cold, treelessness, mud, dust, terrible roads, and generally poor houses! Some of the new houses (K-2624) do not look too bad, nor do the people. (K-2658)

We stop in the virgin steppes and I get a surface sample of the dark Chestnut soil to a 4-inch depth. (K-2621) This is a very dark grayish-brown (10YR 3/2) silt loam with fine granular structure. The top half-inch is slightly platy. The surface is nearly level and there are few slight depressions with Solonchaks. I also take samples of the vegetation which includes mainly Festuca sulcata and Stipa sinctorum.

On this trip we are meandering on field roads somewhat east of the main road. We pass some low hills that seem to be outliers of hard, angular quartz. One might call part of it chert and I see some rosy quartz. In places the material is being blasted out for making gravel. But generally speaking, this area is covered with deep loess.

We look at first-year wheat after reclaiming the virgin Chestnut soil, which I believe will run two tons per hectare. (K-2622) Then I see them making hay from the virgin soil. They expect about 2.5 tons of this wild hay per hectare. I notice that they leave uncut strips to help hold the snow next year.

Now we are on the Unification Collective Farm. Last year they averaged 1.6 tons of wheat per hectare. This is a better year and they expect over 2 tons. Here, too, near the houses I see the manure bricks piled up for fuel. These villages look a bit bleak; what with the wind, cold, treelessness, mud, dust, terrible roads, and generally poor houses! Some of the new houses (K-2624) do not look too bad, nor do the people. (K-2628)



K-2622. August 14, 1958. North of Akmolinsk.
First year wheat on newly plowed dark
Chestnut soil.



K-2623. August 14, 1958. North of Akmolinsk. Making hay on
virgin dark Chestnut soil.

7 2622

K-2622. August 14, 1958. North of Ammolinsk.
First year wheat on newly plowed dark
Chestnut soil.

K-2623. August 14, 1958. North of Ammolinsk. Making hay on
virgin dark Chestnut soil.



K-2624. August 14, 1958. North of Akmolinsk. New house on
Unification Collective Farm.

K-2624. August 14, 1958. North of Kholmansk. New house on
Unification Collective Farm.

I photograph a nice group of Red Steppe cattle grazing on the virgin soil. (K-3689)

We now reach the collective farm named the Eighteenth Anniversary of the Kazakhstan Republic, organized in 1933.



K-2658. August 14, 1958. 75 km. north of Akmolinsk.
Mother and children on Unification Collective Farm.

Sunflowers for silage

Sunflowers for grain

Potatoes

Vegetables

Seed flax

Perennial grass

Fallow

7,200

K-2658. August 14, 1958. 75 km. north of Akmolinsk.
Mother and children on Unification Collective
Farm.

I photograph a nice group of Red Steppe cattle grazing on the virgin soil. (K-2659)

We now reach the collective farm named the Eighteenth Anniversary of the Kazakhstan Republic, organized in 1933.

We stop at the temporary headquarters of brigade No. 1. This is a clean little building with many beds and several small rooms. It has nice new tree plantings around it.

We meet the chairman, Mr. Kandykhan. He is a Korean who has been here for several years and has been chairman since 1944. For his success he has been made a Hero of Socialist Labor.

He gives me the areas as follows, in hectares:

Total area	18,000	
Cropland	10,560	(This does not include plowable land in perennial grass.)
Soft wheat	8,560	
Barley	200	
Corn for silage	550	
Oats	320	
Corn as pasture	200	
Sunflowers for silage	100	(Yield is 27 tons per hectare)
Sunflowers for grain	100	
Potatoes	80	
Vegetables	15	
Seed flax	50	
Perennial grass	2,240	
Fallow	2,200	

I photograph a nice group of Red Steppe cattle grazing on the

virgin soil. (K-2027)

We now reach the collective farm named the Eighteenth Anniversary

of the Kazakhstan Republic, organized in 1933.

We stop at the temporary headquarters of brigade No. 1. This is

a clean little building with many beds and several small rooms. It has

nice new tree plantings around it.

We meet the chairman, Mr. Kandykhan. He is a Korean who has been

here for several years and has been chairman since 1944. For his

success he has been made a Hero of Socialist Labor.

He gives me the areas as follows, in hectares:

Total area	18,000
Cropland	10,560 (This does not include plowable land in perennial grass.)
Soft wheat	8,560
Barley	200
Corn for silage	550
Oats	320
Corn as pasture	200
Sunflowers for silage	100 (Yield is 27 tons per hectare)
Sunflowers for grain	100
Potatoes	80
Vegetables	15
Seed flax	20
Perennial grass	2,240
Fallow	2,200

He also gives the following figures for 1958:

Cattle 1,000 head

Sheep 2,500 head

Hogs 1,000 head

Horses 100 head

Poultry 10,000 head

This year

20 combine

rowers. The

There are

170 are won

Their

each labor

gram of po

The ch

reclaimed but

to establish

and seed a

last year

hectare for

and three

following

1. 1,000

2. 1,000

3. 1,000

4. 1,000



K-2659. August 14, 1958. 75 km. north of Akmolinsk.
Cattle grazing on virgin dark Chestnut soil.
Red Steppe grades.

K-2659. August 14, 1958. 75 km. north of Akmolinsk.
Cattle grazing on virgin dark Chestnut soil.
Red Steppe grades.

K50-118

He also gives the following figures for livestock:

Cattle	1,350, including 385 milk cows
Sheep	5,200
Hogs	1,285
Horses	383
Poultry	over 10,000

This year they bought 27 tractors of which 23 are crawlers; 20 combine harvesters of which 4 are self-propelled; and 23 wind-
rowers. They spent 1,200,000 rubles for their machinery. There are 220 families on the farm and 295 workers of which 170 are women. They roll just before or just after sowing. The seeds are treated with phospho-bacteria.

Their gross income last year was 7,085,000 rubles. Last year each labor day paid 17 rubles, two kilograms of wheat, and 1/2 kilogram of potatoes and vegetables. They reckon a total value of 20 rubles. The chairman says that all the good land on this farm has been reclaimed but they do plan to break up the natural pastures in order to establish improved ones. They expect to plow, sow a grain crop, and seed a permanent meadow.

Last year the cost of ridging snow on the fields was 5 rubles per hectare for each operation. This was done twice on 4,000 hectares and three times on 700 hectares planned for corn. He gives me the following as a rotation:

1. Fallow

2. Wheat

3. Wheat

4. Wheat seeded with grass

He also gives the following figures for livestock:

Cattle	1,350, including 385 milk cows
Sheep	2,200
Hogs	1,285
Horses	383
Poultry	over 10,000

This year they bought 27 tractors of which 23 are crawlers; 20 combine harvesters of which 4 are self-propelled; and 23 wind-
rowers. They spent 1,200,000 rubles for their machinery.
There are 220 families on the farm and 295 workers of which
170 are women.

Their gross income last year was 7,085,000 rubles. Last year
each labor day paid 17 rubles, two kilograms of wheat, and 1 1/2 kilo-
gram of potatoes and vegetables. They reckon a total value of 20 rubles.
The chairman says that all the good land on this farm has been
reclaimed but they do plan to break up the natural pastures in order
to establish improved ones. They expect to plow, sow a grain crop,
and seed a permanent meadow.

Last year the cost of ridging snow on the fields was 2 rubles per
hectare for each operation. This was done twice on 4,000 hectares
and three times on 700 hectares planned for corn. He gives me the
following as a rotation:

1. Fallow
2. Wheat
3. Wheat
4. Wheat seeded with grass

5. Perennial grass have had some bad experiences with shelter-
6. Perennial grass accumulation of snow in and around the belt.
7. Perennial grass the next field and a delay of field work
8. Wheat. Now they are suggesting shrubs instead of trees.
9. Row crops fishy to me. Possibly it is the explanation for
10. Fodder crops

When wheat follows wheat, after harvesting they disk the soil in the fall and plow without moldboards to a depth of 20 centimeters.

In the spring the soil is harrowed twice across the plowing or on the diagonal. The soil is cultivated again if necessary to control weeds. Commonly, they roll just before or just after sowing. The seeds are treated with phospho-bacterin.

This year they expect about 1.7 tons to 1.8 tons per hectare of wheat. Last year they had 1.35 tons and the year before 1.2 tons per hectare. They try to have a stand of wheat that gives 380 plants per square meter. Last year the government paid 740 rubles per ton of wheat.

Last year they had a total of 220,000 labor days. Since more of the men are skilled and since they need a high proportion of skilled laborers, especially tractor drivers, the men on the average made 1,000 labor-day units and the women 486.

I see a new cow shed under construction for 200 cows. They have a building for calves in addition. There is a pigsty under construction for 1,200 hogs, a sheep fold for 1,000 animals, and poultry houses for 5,000 birds.

The hogs are fed barley, oats, sunflowers, potatoes, and alfalfa meal. In the summer they are pastured on alfalfa.

- 2. Perennial grass
- 6. Perennial grass
- 7. Perennial grass
- 8. Wheat
- 9. Row crops
- 10. Fodder crops

When wheat follows wheat, after harvesting they disk the soil in the fall and plow without moldboards to a depth of 20 centimeters. In the spring the soil is harrowed twice across the plowing or on the diagonal. The soil is cultivated again if necessary to control weeds. Commonly, they roll just before or just after sowing. The seeds are treated with phospho-bacterin. This year they expect about 1.7 tons to 1.8 tons per hectare of wheat. Last year they had 1.35 tons and the year before 1.2 tons per hectare. They try to have a stand of wheat that gives 380 plants per square meter. Last year the government paid 740 rubles per ton of wheat. Last year they had a total of 220,000 labor days. Since more of the men are skilled and since they need a high proportion of skilled laborers, especially tractor drivers, the men on the average made 1,000 labor-day units and the women 486. I see a new cow shed under construction for 200 cows. They have a building for calves in addition. There is a pigsty under construction for 1,200 hogs, a sheep fold for 1,000 animals, and poultry houses for 2,000 birds. The hogs are fed barley, oats, sunflowers, potatoes, and alfalfa. In the summer they are pastured on alfalfa.

I am told that they have had some bad experiences with shelterbelts because of excess accumulation of snow in and around the belt. This means less snow in the next field and a delay of field work near the shelterbelt. Now they are suggesting shrubs instead of trees. (This sounds a bit fishy to me. Possibly it is the explanation for a failure.) with 35 senior professional people and 45 juniors and technicians. (I felt fine this morning but now at 3:25 p.m. with no tea or lunch, I am extremely tired.)

I go into a new 4-row cow shed equipped with tracks for manure and for feed. The milking is done with machines.

As we go on through another village I see a little cart with a wooden tank for hauling water. In other villages I see women carrying water in two pails hanging from a neck yoke. laboratory as soil blowing.

As we drive along on this fairly undulating landscape, the depth of loess seems quite variable as well as the material under it. In places this underlying material is light gray and elsewhere it is red or yellow. and well to phosphorus, especially to small amounts with

We pass Shortandy, a rayon center. The houses are small and the streets wide. These streets are either very dusty or very muddy. Some of the houses have little trees near them but most are rather miserable. It is a sad little town on the treeless steppe where life must be pretty hard. 9. Mechanization laboratory to test machines for soil tillage and

We come to the Kazakh Scientific Research Institute on Grain-Crop Growing at 4:10 p.m. The soil here seems to be dark Chestnut, almost Chernozem. Water is had from a small river for some irrigation.

I am told that they have had some bad experiences with shelter-belts because of excess accumulation of snow in and around the belt.

This means less snow in the next field and a delay of field work near the shelterbelt. Now they are suggesting shrubs instead of trees.

(This sounds a bit fishy to me. Possibly it is the explanation for

a failure.)

(I felt fine this morning but now at 3:25 p.m. with no tea or

lunch, I am extremely tired.)

I go into a new 4-row cow shed equipped with tracks for manure

and for feed. The milking is done with machines.

As we go on through another village I see a little cart with a

wooden tank for hauling water. In other villages I see women carrying

water in two pails hanging from a neck yoke.

As we drive along on this fairly undulating landscape, the depth

of loess seems quite variable as well as the material under it. In

places this underlying material is light gray and elsewhere it is

red or yellow.

We pass Shortandy, a rayon center. The houses are small and the

streets wide. These streets are either very dusty or very muddy. Some

of the houses have little trees near them but most are rather miserable.

It is a sad little town on the treeless steppe where life must be pretty

hard.

We come to the Kazakh Scientific Research Institute on Grain-Crop

Growing at 4:10 p.m. The soil here seems to be dark Chestnut, almost

Chernozem. Water is had from a small river for some irrigation.

We are taken to lunch, which lasts until 5:30. Here we have the usual toasts, etc. Then we go to the office of Director Baraev. He and his staff explain their program.

The Institute was founded in 1957 based on a small experimental station in order to serve this area of "virgin soils." They have a staff of 125 with 35 senior professional people and 45 juniors and technicians. They list their principal problems as follows:

1. Study of crop rotations.
2. Investigations of soil management.
3. Soil and water conservation.
4. Hazard of soil blowing studied in a special laboratory of agro-soil science.
5. Reclamation of Solonetz, in same laboratory as soil blowing.
6. Agro-forest amelioration. They study problems of planting to protect crops and soil against hot dry winds.
7. Agro-chemical and fertilizer laboratory. The soils here respond well to phosphorus, especially to small amounts with the seed. Phospho-bacterin gives response. As yet they have had no response to nitrogen.
8. Crop selection laboratory, especially for spring wheat, pulses, grasses, legumes, and oil-bearing crops.
9. Mechanization laboratory to test machines for soil tillage and to suggest changes in design.

We are taken to lunch, which lasts until 2:30. Here we have the usual toasts, etc. Then we go to the office of Director Baranov.

He and his staff explain their program.

The Institute was founded in 1927 based on a small experimental

station in order to serve this area of "virgin soils." They have a

staff of 125 with 35 senior professional people and 45 juniors and

technicians. They list their principal problems as follows:

1. Study of crop rotations.

2. Investigations of soil management.

3. Soil and water conservation.

4. Hazard of soil blowing studied in a special laboratory of

agro-soil science.

5. Reclamation of Solonchaks, in same laboratory as soil blowing.

6. Agro-forest amelioration. They study problems of planting

of trees to protect crops and soil against hot dry winds.

7. Agro-chemical and fertilizer laboratory. The soils here

respond well to phosphorus, especially to small amounts with

the seed. Phospho-bacterin gives response. As yet they have

had no response to nitrogen.

8. Crop selection laboratory, especially for spring wheat, pulses,

grasses, legumes, and oil-bearing crops.

9. Mechanization laboratory to test machines for soil tillage and

to suggest changes in design.

Growing on this soil is a small crop of wheat, barley,

and a small amount of clover.

- (Add) 10. Fruit-growing laboratory. They look for new methods for growing fruits suited to local conditions, which are very difficult, especially because of the winter frost (about -40°C). Only Siberian apples can be grown, which are trained to trail on the ground; but they have some other fruit such as strawberries. They suggest that probably the best way 11. A section on potatoes. With new varieties the crop can be grown here without irrigation. The wide 12. A section on animal husbandry is being organized.

The experimental farm has 13,000 hectares, of which 9,600 are under crop, especially spring wheat. They produce seeds of the good varieties for state and collective farms. Last year they grew 10,000 tons of pure seed wheat with yields of 1.6 tons per hectare. They say they are giving particular attention now to soil management. I ask them about reclamation of the Solonetz (which in our nomenclature is mainly solonetzic Chestnut soil.) They tell about the same story as we had heard: an ordinary plow or disk plow is used to pulverize the A horizon. They do not recommend the reclamation of Solonetz that does not have a deep A horizon. Then they plow without moldboards and allow the soil to lie fallow for a short time. They claim that the phospho-bacterin under experiment on farms increases yields of wheat from .15 to .20 tons per hectare. The best results are had after the first and second year following reclamation and while the organic matter is still high. But they say that one cannot "see" the difference. With ridges, the water in the snow amounts

10. Fruit-growing laboratory. They look for new methods for growing fruits suited to local conditions, which are very difficult, especially because of the winter frost (about -40°C). Only Siberian apples can be grown, which are trained to trail on the ground; but they have some other kinds of fruit such as strawberries.

11. A section on potatoes. With new varieties the crop can be grown here without irrigation.

12. A section on animal husbandry is being organized.

The experimental farm has 13,000 hectares, of which 9,600 are under crop, especially spring wheat. They produce seeds of the good varieties for state and collective farms. Last year they grew 10,000 tons of pure seed wheat with yields of 1.6 tons per hectare. They say they are giving particular attention now to soil manage-

ment. I ask them about reclamation of the Solonchaks (which in our nomenclature is mainly solonchakic Chestnut soil.) They tell about the same story as we had heard: an ordinary plow or disk plow is used to pulverize the A horizon. They do not recommend the reclamation of Solonchaks that does not have a deep A horizon. Then they plow without moldboards and allow the soil to lie fallow for a short time.

They claim that the phospho-bacteria under experiment on farms increases yields of wheat from 15 to 20 tons per hectare. The best results are had after the first and second year following reclamation and while the organic matter is still high. But they say that one cannot "see" the difference.

(Added later: These trials were made by comparing very large fields and I am persuaded that the results are not statistically significant. Dr. Nelson brought some back to the United States for trial under rigidly controlled experiments in the field.)

For shelterbelts they now recommend a somewhat different scheme growing out of their experience. They suggest that probably the best way is to plant trees that will grow tall in two rows but without shrubs. The wide shelterbelts get piled with snow and the effects are reduced. The trees used are mainly poplar, birch, and Siberian larch.

They are now studying the possibility of combining the rows of high trees with the rows of shrubs. The plan is to have the windbreak of two rows three meters apart. The distance to the next trees would be 300 meters. At 40- or 50-meter distances between they would have shrub rows. The shrubs are yellow acacia or Caragana aboresence.

Many farms make snow ridges in winter about 20 to 25 meters apart, although 15 meters is better. Some make ridges in both directions.

In testing the effect of the snow ridges, they measure the water content of the soil in the winter and in the spring. (Obviously the differences cannot be related entirely to snow melt.) In their tests, with no ridges or other practices to catch the snow, they estimate 400 to 500 tons of water in a hectare of soil. In dry years the difference in yield is around 100 percent; in normal years 25 percent; and in very dry years 400 to 500 percent. But then they say that they have years when the soil is deeply frozen before there is much snow and the melt water runs off. With ridges, the water in the snow amounts to 750 to 800 tons.

(Added later: These trials were made by comparing very large fields and I am persuaded that the results are not statistically significant.

Dr. Nelson brought some back to the United States for trial under

rigidly controlled experiments in the field.)

For shelterbelts they now recommend a somewhat different scheme growing out of their experience. They suggest that probably the best way is to plant trees that will grow tall in two rows but without shrubs. The wide shelterbelts get piled with snow and the effects are reduced. The trees used are mainly poplar, birch, and Siberian larch.

They are now studying the possibility of combining the rows of high trees with the rows of shrubs. The plan is to have the windbreak of two rows three meters apart. The distance to the next trees would be 300 meters. At 40- or 50-meter distances between they would have shrub rows. The shrubs are yellow acacia or Caragana aborescens. Many farms make snow ridges in winter about 20 to 25 meters apart, although 15 meters is better. Some make ridges in both directions. In testing the effect of the snow ridges, they measure the water content of the soil in the winter and in the spring. (Obviously the differences cannot be related entirely to snow melt.) In their tests, with no ridges or other practices to catch the snow, they estimate 400 to 500 tons of water in a hectare of soil. In dry years the difference in yield is around 100 percent; in normal years 25 percent; and in very dry years 400 to 500 percent. But then they say that they have years when the soil is deeply frozen before there is much snow and the melt water runs off. With ridges, the water in the snow amounts

to 750 to 800 tons.

Some farms sow sunflowers in 2-row strips about 15 meters apart or, more commonly 20 or 25 meters apart. These are sown when the fallow is last tilled. They claim to have measured 1,100 to 1,200 tons of water in the snow on fields with sunflower strips.

They emphasize the great importance of keeping high stubble to catch snow.

The Director gives me photographs of the snow-ridging machine and of the sunflower strips. From the photograph it appears that sunflowers are also planted in the spring.

Even though it is very late we pile in the cars for a field trip over this enormous station. We are shown some weakly carbonated Chernozem that is said to be subject to soil blowing after cultivation. They recommend that such soils be maintained in grass, at least most of the time.

They tell me about their rotations but there are good opportunities for confusion because soil under perennial grass is not regarded as "cultivated" while it is under grass even though this is part of a rotation. As I get it, if we had 5 fields of about the same size the rotation would be something as follows:

1. Fallow
2. Spring wheat
3. Spring wheat
4. Spring wheat, barley, or oats

Some farms sow sunflowers in 2-row strips about 15 meters

apart or, more commonly 20 or 25 meters apart. These are sown

when the fallow is last tilled. They claim to have measured

1,100 to 1,200 tons of water in the snow on fields with sunflower

strips. They emphasize the great importance of keeping high stubble

to catch snow. The Director gives me photographs of the snow-riding machine

and of the sunflower strips. From the photograph it appears that

sunflowers are also planted in the spring. Even though it is very late we pile in the cars for a field trip

over this enormous station. We are shown some weakly carbonated

Chernozem that is said to be subject to soil blowing after cultiva-

tion. They recommend that such soils be maintained in grass, at

least most of the time. They tell me about their rotations but there are good opportuni-

ties for confusion because soil under perennial grass is not regarded

as "cultivated" while it is under grass even though this is part of

a rotation. As I get it, if we had 5 fields of about the same size

the rotation would be something as follows:

1. Fallow

2. Spring wheat

3. Spring wheat

4. Spring wheat, barley, or oats



Copy of photo given me at the institute near Shortandy,
showing a tractor-drawn snow-ridging machine.

After a few days the field was under a mixture of
 created vegetation and snow. These are allowed to grow for



Copy of photo given me at the institute near Shortandy,
 illustrating strips of sunflowers for holding snow on the fields.

for each 4-5 meters. The width of the strips is 10-15 meters. These
 figures for the width of the strips are given for the strips which
 are organized and planted.

We continue to find that the strips of sunflowers are rough and
 dusty roads to be shown their various advantages of rotation and
 tillage. I took a nice field of hard winter wheat (No. 1) in
 following single fallow. This was yield about 3 tons per hectare.

After 4 of these cycles the field comes under a mixture of crested wheatgrass and alfalfa. These are allowed to grow for 4 years. Thus we would have a 20-year rotation with 4 fields in crop and 1 field in grass.

On the carbonated Chernozem that is subject to blowing they recommend plowing, with moldboards, only the virgin soil or after several years in grass. At any other time they recommend shallow disking one year, then plowing without moldboards, then disking, and then plowing without moldboards. We see some soils here that are only weakly carbonated if at all and seem to me to be silty clay loams transitional between Chestnut and Chernozem. I see some nice wheat after shallow disking that has followed wheat that was sown after shallow plowing without moldboards. I estimate 26 bushels to the acre (or about 1.7 tons per hectare) of hard red spring wheat. (K-2625) They tell me that this gets a premium of 40 percent above the regular price.

They tell me that they go over the land with machines 7 times to produce a crop of wheat. They say they get 100 kilograms of wheat for each 0.88 man-days. But I don't know how they calculate these figures for they certainly do not include all the labor as these farms are organized and staffed.

We continue to drive around these big wheat fields on rough and dusty roads to be shown their various combinations of rotation and tillage. I look at a nice field of hard white wheat (Akmolinka 5) following virgin fallow. This may yield nearly 3 tons per hectare.

After 4 of these cycles the field comes under a mixture of created wheatgrass and alfalfa. These are allowed to grow for 4 years. Thus we would have a 20-year rotation with 4 fields in crop and 1 field in grass.

On the carbonated Chernozem that is subject to blowing they recommend plowing, with moldboards, only the virgin soil or after several years in grass. At any other time they recommend shallow disking one year, then plowing without moldboards, then disking, and then plowing without moldboards. We see some soils here that are only weakly carbonated if at all and seem to me to be silty clay loams transitional between Chestnut and Chernozem. I see some nice wheat after shallow disking that has followed wheat that was sown after shallow plowing without moldboards. I estimate 26 bushels to the acre (or about 1.7 tons per hectare) of hard red spring wheat. (K-2625) They tell me that this gets a premium of 40 percent above the regular price.

They tell me that they go over the land with machines 7 times to produce a crop of wheat. They say they get 100 kilograms of wheat for each 0.88 man-days. But I don't know how they calculate these figures for they certainly do not include all the labor as these farms are organized and staffed.

We continue to drive around these big wheat fields on rough and dusty roads to be shown their various combinations of rotation and tillage. I look at a nice field of hard white wheat (Akmolinka 2) following virgin fallow. This may yield nearly 3 tons per hectare.

Now I'm told that they have brought under the plow 23,000,000 hectares of virgin soil in this Republic and plan to take up another 5,000,000 hectares. Their soil is very rich and average quite as productive as the best soil in the United States.

Just about

to see this in

On the low

with ordinary pl

other ways to c

for sod fields

some grain pests

Since late

order that the c

early sowing fail to have secondary roots. They must sow by

however, to avoid the

sowing period to between

September 1 and not later than September 10.

I should say that the growing situation here resembles that of

central Saskatchewan.

They tell me they have had good results with herbicides at the

stage of tillering. But there are in their way.

The average collective farm is said to have 13,000 hectares under

crop. One state farm has 75,000 hectares. The average state farm has

20,000 hectares under crop. They tell me that the big state farm pro-

duces 100 kilograms of grain from 1 hectare. (I very much

doubt this figure.)



K-2625. August 14, 1958. Near Shortandy. Wheat on Institute farm. Probably about 26 bushels per acre or 1.7 tons per hectare. Chernozem. (Dr. Cline).

K-2625. August 14, 1958. Near Shortandy. Wheat on
Institute farm. Probably about 20 bushels
per acre or 1.7 tons per hectare. Chernozem.
(Dr. Cline).

Now I'm told that they have brought under the plow 23,000,000 hectares of virgin soils in this Republic and plan to take up another 5,000,000 hectares. These new soils may not average quite so productive as the earlier ones. Just about dark we are shown a virgin Chernozem profile. I plan to see this in the morning.

On the long drive back they talk some more about their experiments with ordinary plowing, plowing without moldboards, shallow plowing, and other ways to conserve the stubble. Normally they use moldboard plows for sod fields but they also use them to turn down deeply the larvae of some grain pests that normally live at 5 centimeters.

Since late May and early June are dry, they try to sow late in order that the crop can make the best use of the rain. Plants from early sowing fail to have secondary roots. They must sow by May 25, however, to avoid the danger of September frost. This narrows the sowing period to between May 10 and May 25. Normally they harvest by September 1 and not later than September 10.

I should say that the growing situation here resembles that of central Saskatchewan.

They tell me they have had good results with herbicides at the stage of tillering. But these are in short supply.

The average collective farm in this area has 13,000 hectares under crop. One state farm sows 75,000 hectares. The average state farm has 28,000 hectares under crop. They tell me that the big state farm produces 100 kilograms of grain with .6 man-days. (Again I very much doubt this figure.)

Now I'm told that they have brought under the plow 23,000,000 hectares of virgin soils in this Republic and plan to take up another 2,000,000 hectares. These new soils may not average quite so productive as the earlier ones.

Just about dark we are shown a virgin Chernozem profile. I plan to see this in the morning.

On the long drive back they talk some more about their experiments with ordinary plowing, plowing without moldboards, shallow plowing, and other ways to conserve the stubble. Normally they use moldboard plows for sod fields but they also use them to turn down deeply the larvae of some grain pests that normally live at 5 centimeters.

Since late May and early June are dry, they try to sow late in order that the crop can make the best use of the rain. Plants from early sowing fail to have secondary roots. They must sow by May 25, however, to avoid the danger of September frost. This narrows the sowing period to between May 10 and May 25. Normally they harvest by September 1 and not later than September 10.

I should say that the growing situation here resembles that of

central Saskatchewan.

They tell me they have had good results with herbicides at the

stage of tillering. But these are in short supply.

The average collective farm in this area has 13,000 hectares under crop. One state farm sows 75,000 hectares. The average state farm has 28,000 hectares under crop. They tell me that the big state farm pro-

duces 100 kilograms of grain with 6 man-days. (Again I very much

doubt this figure.)

We are finally at the camp for sleeping, here near the Institute, at 8:45. I have a little bread, cheese, and tea; wash; and go to bed.

This is the end of an extremely difficult day. Partly our hosts are really hospitable and partly they are totally indifferent to our physical welfare. The Director of the Institute here is more human and is a much better agriculturist than the old boy in charge for the agricultural administration for the Oblast.

trip will strain my Russian a great deal. Just as we leave Eddie rushes out in his robe, but I tell him to stay.

We go out about 15 miles into a virgin area of weakly carbonated ordinary Chernozem. (K-2627) This is about 85 kilometers north of northwest of Almolinsk.

The light is too poor to take pictures with the early morning sun at a right angle to the trench. (All soil colors are moist.)

- | | | |
|-----------------|---------|---|
| A ₁₁ | 0 - 1" | Very dark brown (10YR 2/2) silty clay loam held by roots of small bunchy grass (<i>Festuca sulcata</i>). Strong, very fine granular; mulch-like surface. |
| A ₁₂ | 1 - 10" | This horizon has a clear, irregular, wavy lower boundary, as shallow as 6 inches and as deep as 20 inches. Very dark brown (10YR 2/2) silty clay loam. Moderately prismatic that falls into mixed friable small and medium subangular blocky and coarse granular. |

We are finally at the camp for sleeping, here near the Institute, at 8:45. I have a little bread, cheese, and tea; wash; and go to bed.

This is the end of an extremely difficult day. Partly our hosts are really hospitable and partly they are totally indifferent to our physical welfare. The Director of the Institute here is more human and is a much better agriculturist than the old boy in charge for the agricultural administration for the Oblast. Here about these experiments with ordinary plowing, plowing without neighbors, shallow plowing, and other ways to conserve the soil. Usually they are not successful. The soil fields but they also use them to grow some things. The latter is a good grain which naturally lives at 5 months.

Stade last day and early last day, they try to sow late in order that the crop can make the best use of the rain. Usually they sow early sowing late to have necessary roots. They want now to sow late, to avoid the danger of September frost. This means the sowing period is between May 10 and May 25. Usually they sow late in September and not later than September 10.

I should say that the growing situation here is somewhat like it. General Zakharenko.

They tell me they have had good results with the collection of the stage of collection. The stage is in the stage.

The average collection here in this area is 15-20 tons per hectare. One hectare here is 15-20 tons. The average is 15-20 tons per hectare. They tell me that the best stage here is 15,000 hectares under crop. They tell me that the best stage here is 15,000 hectares under crop. They tell me that the best stage here is 15,000 hectares under crop. They tell me that the best stage here is 15,000 hectares under crop.

August 15

Unhappily, I awaken about 5:30. I make myself a glass of milk and rest until 6:15. The maid brings me boiling water for tea and strawberry jam. So I make out quite well, along with the bread and cheese I stored last night.

At 7:00 a.m. Dr. Cline and I are ready to go and look at the Chernozem. Most others, including our interpreter, are asleep. This trip will strain my Russian a great deal. Just as we leave Eddie rushes out in his robe, but I tell him to stay.

We go out about 15 miles into a virgin area of weakly carbonated ordinary Chernozem. (K-2627) This is about 85 kilometers north of northwest of Akmolinsk.

The light is too poor to take pictures with the early morning sun at a right angle to the trench. (All soil colors are moist.)

- | | | |
|-----------------|---------|---|
| A ₁₁ | 0 - 1" | Very dark brown (10YR 2/2) silty clay loam held by roots of small bunchy grass (<u>Festuca</u> <u>sulcata</u> ?). Strong, very fine granular; mulch-like surface. |
| A ₁₂ | 1 - 10" | This horizon has a clear, irregular, wavy lower boundary, as shallow as 6 inches and as deep as 20 inches. Very dark brown (10YR 2/2) silty clay loam. Moderately prismatic that falls into mixed friable small and medium subangular blocky and coarse granular. |

August 15

Unhappily, I awaken about 5:30. I make myself a glass of milk and rest until 6:15. The maid brings me boiling water for tea and strawberry jam. So I make out quite well, along with the bread and cheese I stored last night.

At 7:00 a.m. Dr. Cline and I are ready to go and look at the Chernozem. Most others, including our interpreter, are asleep. This trip will strain my Russian a great deal. Just as we leave Eddie rushes out in his robe, but I tell him to stay.

We go out about 15 miles into a virgin area of weakly carbonated ordinary Chernozem. (K-2627) This is about 85 kilometers north of northwest of Akmolinsk.

The light is too poor to take pictures with the early morning sun at a right angle to the trench. (All soil colors are moist.)

Very dark brown (10YR 2/2) silty clay loam held by roots of small bunchy grass (*Festuca sulcata*?). Strong, very fine granular; mulch-like surface.

A11 0 - 1"

This horizon has a clear, irregular, wavy lower boundary, as shallow as 6 inches and as deep as 20 inches. Very dark brown (10YR 2/2) silty clay loam. Moderately prismatic that falls into mixed friable small and medium subangular blocky and coarse granular.

A12 1 - 10"

B₂

10 + 24"

Very dark grayish-brown (10YR 3.5/2)
heavy silt loam; the ped coats are
(10YR 3/2). Medium to strong prismatic
that falls into 10YR 3.5/2 subangular blocks
and angular blocks. Slightly firm; many
fine roots; some roots are pruned against
the ped surfaces.



K-2627. August 15, 1958. Near Shortand. Virgin Chernozem
landscape. (Dr. Cline, left.)

Grass covers 60 percent of the surface.
the surface.

This is indeed a beautiful soil especially for where it is. With moderate
care there should be no great hazard of soil blowing.

As we drive back toward the Institute I see an old man and a woman
wild hay with a horse pulling very slow. We make a hurried stop
to look at another soil much like the one I have described, but with
a bit thinner horizon.

They have a small house and a few chickens and a pig.

August 12

August 12, 1958. Near Shortlandy. Virgin Chernozem.
The soil is very dark and rich. The soil is very dark and rich.
The soil is very dark and rich. The soil is very dark and rich.

K-2627

K-2627. August 12, 1958. Near Shortlandy. Virgin Chernozem.
landscape. (Dr. Cline, left.)

- B₂ 10 - 24" Very dark grayish-brown (10YR 3.5/2 heavy silt loam; the ped coats are (10YR 3/2). Medium to strong prismatic that falls into friable subangular blocky and angular blocky. Slightly firm; many fine roots; some roots are pressed against the ped surfaces; some peds have organic coats; irregular lower boundary, as little as 19 inches and as much as 30, within 4 to 6 inches laterally.
- B₃ 24 - 42" Brown (7.5YR 5/4) silty clay with very weak medium prismatic structure that falls into fairly friable weak blocky; firm; slightly plastic; clear wavy boundary.
- C_{cs} 42 - 51" Brown (7.5YR 5/4) silty clay loam. Small "eyes" of gypsum are white (10YR 8/2). Massive but digs out in easily friable clods; clear wavy boundary.
- C 51 - 85"+ Brown (7.5YR 5/4) silty clay loam. Massive and friable, with a few accretions of gypsum.

The soil is calcareous throughout. I suspect that this mild carbonate was introduced by recent loess after the soil was fairly well developed. There are krotovinas throughout and especially in the B₃.

The area is nearly level. Marmot mounds are about 30 feet in diameter and 20 to 30 inches high. I estimate about 2 of these per acre. Grass covers 60 percent of the surface. I take a sample 4" x 4" x 4" at the surface.

This is indeed a beautiful soil especially for wheat. With moderate care there should be no great hazard of soil blowing.

As we drive back toward the Institute I see men mowing and raking wild hay with tractors pulling very wide tools. We make a hurried stop to look at another soil much like the one already described, but with a bit thinner A horizon.

Very dark grayish-brown (10YR 3.5/2) heavy silt loam; the bed coats are (10YR 3/2). Medium to strong prismatic that falls into friable subangular blocky and angular blocky. Slightly firm; many fine roots; some roots are pressed against the bed surfaces; some beds have organic coats; irregular lower boundary, as little as 19 inches and as much as 30, within 4 to 6 inches laterally.

B₂ 10 - 24"

Brown (7.5YR 5/4) silty clay with very weak medium prismatic structure that falls into fairly friable weak blocky; firm; slightly plastic; clear wavy boundary.

B₃ 24 - 42"

Brown (7.5YR 5/4) silty clay loam. Small "eyes" of gypsum are white (10YR 8/2). Massive but digs out in easily friable clods; clear wavy boundary.

C_{ca} 42 - 51"

Brown (7.5YR 5/4) silty clay loam. Massive and friable, with a few accretions of gypsum.

C 51 - 85" +

The soil is calcareous throughout. I suspect that this mild carbonate was introduced by recent loess after the soil was fairly well developed. There are knotovinas throughout and especially in the B₃.

The area is nearly level. Marmot mounds are about 30 feet in diameter and 20 to 30 inches high. I estimate about 2 of these per acre. Grass covers 60 percent of the surface. I take a sample 4" x 4" x 4" at the surface.

This is indeed a beautiful soil especially for wheat. With moderate care there should be no great hazard of soil blowing.

As we drive back toward the Institute I see men mowing and taking wild hay with tractors pulling very wide tools. We make a hurried stop to look at another soil much like the one already described, but with a bit thinner A horizon.

We are back at the Institute, have breakfast about 9:15. The

The livestock is said to be as follows:

others will look at some of the plots near the headquarters while

Cattle 1,380, of which 294 are milk cows

we finish. I am beginning to feel a little ill; I think wholly

Sheep 1,300

from fatigue.

Hogs 814, of which 60 are sows and 120

Since we are supposed to visit a state farm at a long distance

Poultry 600

from the Institute I press the group to get started and we leave at

Horses 110

10:00 a.m. over bad roads.

Ballocks 14

This is called the Shortandinski State Farm, from the name of

The main machinery items are as follows:

local fish. The farm has a total area of 50,614 hectares of which

Tractors, crawlers, DT-54 20

39,722 are plowed, and 35,864 are under crops. The farm was estab-

Tractors, crawlers, S-30 10

lished only three years ago on virgin soil.

Tractors, tire 12

Since we have 80 kilometers to go and must return by the same

Combines harvesters,

route, I try to get the statistics about it on the way.

They give me the following figures, in hectares, on their crops:

propelled 8

Wheat 33,775

Windrowers, tractor drawn 36

Barley 262

Windrowers, tractor mounted 6

Oats 501

Trucks 44

Millet 395

Cars 2

Sunflowers for seed 120

Snow ridgers 17

Sunflowers for silage 225

Of course they have many other machines to go with this equipment.

Corn for silage 626

Milking is done by hand.

Potatoes 80

They have 4 storage houses for grain that hold 2,500 tons apiece.

Irrigated vegetables 10

There are 294 families on this farm and 496 workers of which they

Peas 10

say about 70 percent are men. They also use 300 seasonal workers during

Perennial grass 3,093

harvest. These are said to be mainly students and young factory workers

They have no shelterbelts yet, but these are in the plan.

among the Colemans. All the work is piece work so they have no figures

We are back at the Institute, have breakfast about 9:15. The

others will look at some of the plots near the headquarters while

we finish. I am beginning to feel a little ill; I think wholly

from fatigue.

Since we are supposed to visit a state farm at a long distance

from the Institute I press the group to get started and we leave at

10:00 a.m. over bad roads.

This is called the Shortland State Farm, from the name of

local fish. The farm has a total area of 50,614 hectares of which

39,722 are plowed, and 32,864 are under crops. The farm was estab-

lished only three years ago on virgin soil.

Since we have 80 kilometers to go and must return by the same

route, I try to get the statistics about it on the way.

They give me the following figures, in hectares, on their crops:

Wheat	33,775
Barley	262
Oats	501
Miller	392
Sunflowers for seed	120
Sunflowers for silage	225
Corn for silage	626
Potatoes	80
Irrigated vegetables	10
Peas	10
Perennial grass	3,093

They have no shelterbelts yet, but these are in the plan.

The livestock is said to be as follows:

Cattle	1,380, of which 294 are milk cows
Sheep	1,500
Hogs	814, of which 60 are sows and 120 are one-litter sows .92 ton
Poultry	600
Horses	110
Bullocks	14

The main machinery items are as follows:

Tractors, crawlers, DT-54	98
Tractors, crawlers, S-80	10
Tractors, tire	12
Combine harvesters, tractor drawn	103
Combine harvester, self-propelled	8
Windrowers, tractor drawn	36
Windrowers, tractor mounted	6
Trucks	44
Cars	2
Snow ridgers	17

Of course they have many other machines to go with this equipment.

Milking is done by hand.

They have 4 storage houses for grain that hold 2,500 tons apiece.

There are 294 families on this farm and 496 workers of which they say about 70 percent are men. They also use 300 seasonal workers during harvest. These are said to be mainly students and young factory workers among the Comsomols. All the work is piece work so they have no figures

among the Comsomola. All the work is piece work so they have no figures
 harvest. These are said to be mainly students and young factory workers
 say about 70 percent are men. They also use 300 seasonal workers during
 There are 294 families on this farm and 496 workers of which they
 They have 4 storage houses for grain that hold 2,500 tons apiece.
 Milking is done by hand.

Of course they have many other machines to go with this equipment.

17	Snow ridgers
2	Cars
44	Trucks
6	Windrowers, tractor mounted
36	Windrowers, tractor drawn
8	propelled
103	Combine harvester, self-

The main machinery items are as follows:

103	Tractor drawn
12	Tractors, tire
10	Tractors, crawlers, 2-80
98	Tractors, crawlers, DT-54

Bullocks

Horses

Poultry

814, of which 60 are sows and 120 are one-litter sows

1,500

1,380, of which 294 are milk cows

Cattle

The livestock is said to be as follows:

for labor days. In 1957 they paid out 6,426,000 rubles for labor. Their gross income was 10,482,000 rubles. Because of better weather this season and higher yields they expect a gross income of around 25,000,000 rubles. a bit of straw.

During the last 3 years yields of wheat have averaged .92 ton per hectare. This year they expect 1.5 tons per hectare. The government buys the wheat for 680 rubles per ton. They expect to deliver to the government 40,000 tons of wheat, which will give them a bonus. Next year they will grow wheat on another 3,000 hectares being broken out this year. (What a terrible road!!!)

Every 5 or 6 years they have one year of fallow to control weeds and, the agronomist says, to improve soil structure. Beginning next year, their plan calls for having the fields under grass for periods of 4 years to be followed by a 6-year crop rotation or a 10-year crop rotation.

The main grasses are couch grass and sanfoin but they will have alfalfa and crested wheatgrass. Although this will not greatly increase the percentage of land under grass, they expect to increase the quality and production of grass and thus increase their livestock, especially for milk and butter. It is hard for me to believe that they would not be better off with some beef cattle and good dairy cattle rather than this local white-faced Kazakh breed. They market their cattle at 1 year and 8 months and live weights are about 300 to 325 kilograms, I take it for the better ones.) There are considerable

numbers of small ewes that are now wettish.

for labor days. In 1957 they paid out 6,426,000 rubles for labor. Their gross income was 10,482,000 rubles. Because of better weather this season and higher yields they expect a gross income of around 22,000,000 rubles.

During the last 3 years yields of wheat have averaged .92 ton per hectare. This year they expect 1.5 tons per hectare. The government buys the wheat for 680 rubles per ton. They expect to deliver to the government 40,000 tons of wheat, which will give them a bonus. Next year they will grow wheat on another 3,000 hectares being broken out this year. (What a terrible road!!!)

Every 5 or 6 years they have one year of fallow to control weeds and, the agronomist says, to improve soil structure. Beginning next year, their plan calls for having the fields under grass for periods of 4 years to be followed by a 6-year crop rotation or a 10-year crop rotation.

The main grasses are couch grass and sanfoin but they will have alfalfa and crested wheatgrass. Although this will not greatly increase the percentage of land under grass, they expect to increase the quality and production of grass and thus increase their livestock, especially for milk and butter. It is hard for me to believe that they would not be better off with some beef cattle and good dairy cattle rather than this local white-faced Kazakh breed. They market their cattle at 1 year and 8 months and live weights are about 300 to 325 kilograms. I take it for the better ones.

As we drive along this earth road in the nearly flat treeless steppe, the land seems limitless. Near a small village by a livestock barn we pass a small pond where people are making fuel bricks out of manure and a bit of straw.

The agronomist tells me that they use artificial insemination for sheep, but not for cattle. Last year they sold 9,500 tons of milk to the government, which, as usual, was 70 percent of their production. Besides, most families have a cow, pigs, and poultry,

We pass a thermal power station built over a local coal mine said to be 180 feet deep.

As I look ahead near the little town of Zholybet, I see a large heap of earth that appears to be mine tailings. I am told that it is a gold mine. (Added later: I discover a little later that we do a lot of extra driving around this farm to avoid being taken near this "gold mine.")

We arrive at the state farm about 11:08 and meet the manager, Mr. Kirilov, and part of his staff. This farm has two villages. The one here appears rather bleak in a bleak undulating steppe.

We drive out on the farm. Along the bottom of the drainageways hard rock is exposed that looks to be metamorphic. We drive over a large area of undulating to rolling steppe with some outcroppings of unidentified rock at the top of the low hills. I am told this is dark Chestnut soil with Solonetz. (They say they have a soil map, but I do not see it.) There are considerable numbers of small swales that are now wettish.

As we drive along this earth road in the nearly flat treeless steppe, the land seems limitless. Near a small village by a livestock barn we pass a small pond where people are making fuel bricks out of manure and a bit of straw.

The agronomist tells me that they use artificial insemination

for sheep, but not for cattle. Last year they sold 9,500 tons of

milk to the government, which, as usual, was 70 percent of their

production. Besides, most families have a cow, pigs, and poultry,

We pass a thermal power station built over a local coal mine

said to be 180 feet deep.

As I look ahead near the little town of Zholymbet, I see a large

heap of earth that appears to be mine tailings. I am told that it is

a gold mine. (Added later: I discover a little later that we do a

lot of extra driving around this farm to avoid being taken near this

"gold mine.")

We arrive at the state farm about 11:08 and meet the manager,

Mr. Kirilov, and part of his staff. This farm has two villages. The

one here appears rather bleak in a bleak undulating steppe.

We drive out on the farm. Along the bottom of the drainways

hard rock is exposed that looks to be metamorphic. We drive over a

large area of undulating to rolling steppe with some outcroppings

of unidentified rock at the top of the low hills.

I am told this is dark Chestnut soil with Solonchaks. (They say

they have a soil map, but I do not see it.) There are considerable

numbers of small swales that are now wetish.

We stop and look at freshly plowed virgin Chestnut soil.

(K-2628; K-2629) Soon after plowing they go over it with a heavy disk harrow. This is followed by zigzag spike harrows and then heavy rollers. In this condition it goes over the winter. During the winter snow ridges are made. In the spring the field will be harrowed twice across the furrows. Where necessary for a good seedbed, they disk again and then sow the seed. On this field they say they can expect 2.1 tons to 2.2 tons per hectare. After 6 or 7 years it will go back to grass again.

I look at fourth-year wheat that is already getting a bit weedy.

(K-2630) In parts of this farm there is quite a lot of wasteland from these swales, many of which have pools of water now. These are about 1/4 acre to 2 1/2 acres. Besides, there are spots of Solonetz. We are shown another field plowed in 1954 without moldboards. (In my picture (K-2631) here the "gold mine" shows dimly in the far right.)

This farm does not look prosperous to me judging from the villages. Most of the houses are double but in poor repair or appearance. One wonders whether the permanent workers are very well paid.

Our host drives us on these dusty roads in a circuitous route to keep us from seeing this so-called "gold mine." We leave at 1 p.m. This visit was hardly worth the candle. This fellow Strukov, head of the agricultural administration of the Oblast, strikes me as a rather stupid Party hack who could not care less about our welfare or about agricultural science. He seems to be a kind of Russian Captain Bligh.

August 13, 1954. M. S. Strukov. No. 2631. State Farm. Fresh plowing of virgin dark Chestnut soil. Close view.

We stop and look at freshly plowed virgin Chestnut soil.
 (K-2628; K-2629) Soon after plowing they go over it with a
 heavy disk harrow. This is followed by zigzag spike harrows
 and then heavy rollers. In this condition it goes over the winter.
 During the winter snow ridges are made. In the spring the field will
 be harrowed twice across the furrows. Where necessary for a good
 seeded, they disk again and then sow the seed. On this field they
 say they can expect 2.1 tons to 2.2 tons per hectare. After 6 or
 7 years it will go back to grass again.
 I look at fourth-year wheat that is already getting a bit weedy.
 (K-2630) In parts of this farm there is quite a lot of wasteland from
 these swales, many of which have pools of water now. These are about
 1/4 acre to 2 1/2 acres. Besides, there are spots of Solonchaks. We
 are shown another field plowed in 1954 without moldboards. (In my
 picture (K-2631) here the "gold mine" shows dimly in the far right.)
 This farm does not look prosperous to me judging from the villages.
 Most of the houses are double but in poor repair or appearance. One
 wonders whether the permanent workers are very well paid.
 Our host drives us on these dusty roads in a circuitous route
 to keep us from seeing this so-called "gold mine." We leave at 1 p.m.
 This visit was hardly worth the candle. This fellow Strukov, head
 of the agricultural administration of the Oblast, strikes me as a
 rather stupid Party hack who could not care less about our welfare
 or about agricultural science. He seems to be a kind of Russian
 Captain Bligh.



K-2628. August 15, 1958. N. E. of Shortandy. Shortandsinski State Farm. Fresh plowing of virgin dark Chestnut soil.



K-2629. August 15, 1958. N. E. Of Shortandy. Shortandsinski State Farm. Fresh plowing of virgin dark Chestnut soil. Close view.

K-2628. August 12, 1958. N. E. of Shortangy. Shortandalski State
Farm. Fresh plowing of virgin dark Chestnut soil.

Top

K-2629. August 12, 1958. N. E. of Shortangy. Shortandalski State
Farm. Fresh plowing of virgin dark Chestnut soil. Close
view.



K-2630. August 15, 1958. N. E. of Shortandy.
Shortandsinski State Farm. Fourth year
wheat, already a bit weedy. (Dr. Nelson).



K-2631. August 15, 1958. N. E. of Shortandy.
Shortandsinski State Farm. Wheat on dark
Chestnut soil broken out in 1954 and plowed
last year without moldboards.

K-2631. August 15, 1958. N. E. of Shortland.
Shortlandski State Farm. Wheat on dark
Chestnut soil broken out in 1954 and plowed
last year without moldboards.

K-2630. August 15, 1958. N. E. of Shortland.
Shortlandski State Farm. Fourth year
wheat, already a bit weedy. (Dr. Nelson).

I stop to take some pictures of wheat on the way back. (K-2632)

We see a few groves of scattered birch and pine on the north-facing slopes.

We return to the bunkhouse at 2:15 and have lunch. I then look hurriedly at the apples that trail on the ground. (K-2633)

K-2634) These

grow naturally

the snow alone.

must be hardy a

At 3:45 we

near Abolinsk.

It is obvi

reason since we

It is simply a

and somewhat to

to the west. This way we

main road. Yet we continue on this horrible gravel road which seems

to go roughly parallel to the main road and railroad to the northeast

of us.

I see wild and

It is raked up with

by hand. I am sure that

counted in the figures



K-2632. August 15, 1958. N. E. Of Shortandy. Wheat on recently plowed dark Chestnut soil. (Good crop).

main road. Yet we continue on this horrible gravel road which seems to go roughly parallel to the main road and railroad to the northeast of us.

I see wild and hairy horses with a regular owner pulled by horses. It is raked up with a machine and then put into small stacks by hand. I am sure that this labor are not counted in the figures which have been given to indicate high efficiency.

2632

XVII

8

K-2632. August 15, 1958. N. E. of Shortland. Wheat
on recently plowed dark Chestnut soil.
(Good crop).

K-2631. August 15, 1958. N. E. of Shortland. Wheat
on recently plowed dark Chestnut soil.
(Good crop).

I stop to take some pictures of wheat on the way back. (K-2632)
We see a few groves of natural birch and pine on the north-facing slopes.

We return to the Institute at 2:15 and have lunch. I then look hurriedly at the apples that trail on the ground. (K-2633 and K-2634) These are trained to trail and not a special variety that grows naturally that way. I am told the low apples are protected by the snow alone. I see some upright trees of the same variety that must be hardy although they are protected by deciduous shelterbelts.

At 3:45 we start for the original camp of "Rest and Culture" near Akmolinsk.

It is obvious that our hosts are avoiding the main road for some reason since we are taken on an ungraded, rough, dusty, prairie road. It is simply a complex of old field roads. About 10 miles out of, and somewhat to the west of the main road, I see the top of a tower to the east. This may well be the top of an oil derrick near the main road. Yet we continue on this terrible prairie road which seems to go roughly parallel to the main road and railroad to the northeast of us.

I see wild hay being made with a regular mower pulled by horses. It is raked up with one-horse dump rakes and is put into small stacks by hand. I am sure these kinds of practices and this labor are not counted in the figures they have given me to indicate high efficiency.

I stop to take some pictures of wheat on the way back. (K-2632)

We see a few groves of natural birch and pine on the north-facing

slopes.

We return to the Institute at 2:15 and have lunch. I then

look hurriedly at the apples that trail on the ground. (K-2633 and

K-2634) These are trained to trail and not a special variety that

grows naturally that way. I am told the low apples are protected by

the snow alone. I see some upright trees of the same variety that

must be hardy although they are protected by deciduous shelterbelts.

At 3:45 we start for the original camp of "Rest and Culture"

near Akmolinsk.

It is obvious that our hosts are avoiding the main road for some

reason since we are taken on an ungraded, rough, dusty, prairie road.

It is simply a complex of old field roads. About 10 miles out of,

and somewhat to the west of the main road, I see the top of a tower

to the east. This may well be the top of an oil derrick near the

main road. Yet we continue on this terrible prairie road which seems

to go roughly parallel to the main road and railroad to the northeast

of us.

I see wild hay being made with a regular mower pulled by horses.

It is raked up with one-horse dump rakes and is put into small stacks

by hand. I am sure these kinds of practices and this labor are not

counted in the figures they have given me to indicate high efficiency.



K-2633. August 15, 1958. Shortandy. Apples trained near the ground to have snow protection.



K-2634. August 15, 1958. Shortandy. Apples trained near the ground to have snow protection.

K-2633. August 12, 1958. Shortlandy. Apples trained near the ground to have snow protection.

K-2634. August 12, 1958. Shortlandy. Apples trained near the ground to have snow protection.

Out about 20 miles I see the top of another derrick far to my right - to the west. And in another 2 miles I see a third one on my left, to the east.

In places the soil has a reddish color suggesting scoria in the parent material where the loess is thin. This may be an area with both coal and oil and the scoria may have resulted from very ancient natural burning of coal near the surface, as in the western part of North Dakota.

I am getting very much put out by being led all around something on these terrible field roads. We meet only the odd farm truck and see very few small villages.

Out about 25 miles I see a big column of smoke to the east about where the main road should be.

We pass a small village, probably a brigade headquarters, where houses are being made of brick that appear to be a mixture of cow manure, mud, and straw. These bricks are about 3 times the normal size.

At 5:03 we cross the railroad on a large flat area that suggests a lake plain and are then taken back to the main road at the location of a fairly good-looking collective farm. Now we can move along on this good road. The soils look to me to be Brown soils with some Solonetz.

After having wasted more than an hour on these hide-and-seek, winding, dusty prairie roads, we come to the edge of Akmolinsk at 5:35.

Out about 20 miles I see the top of another derrick far to my right - to the west. And in another 2 miles I see a third one on my left, to the east.

In places the soil has a reddish color suggesting scoria in the parent material where the loess is thin. This may be an area with both coal and oil and the scoria may have resulted from very ancient natural burning of coal near the surface, as in the western part of North Dakota.

I am getting very much put out by being led all around something on these terrible field roads. We meet only the odd farm truck and see very few small villages. Out about 25 miles I see a big column of smoke to the east about where the main road should be.

We pass a small village, probably a brigade headquarters, where houses are being made of brick that appear to be a mixture of cow manure, mud, and straw. These bricks are about 3 times the normal size.

At 5:03 we cross the railroad on a large flat area that suggests a lake plain and are then taken back to the main road at the location of a fairly good-looking collective farm. Now we can move along on this good road. The soils look to me to be Brown soils with some Solonchaks.

After having wasted more than an hour on these hide-and-seek, winding, dusty prairie roads, we come to the edge of Akmolinsk at 5:35.



K-2660. August 15, 1958. Akmolinsk. Old-style wooden house.

K-2660. August 15, 1958. Akmoinsk. Old-style wooden house.

At the edge of the city I see many little low houses with roofs of soil and straw. I stop long enough to photograph one of the old-type wooden houses with carvings on it. (K-2660) (I seem to smell oil again; and this reminds me that when we got back to the main road the traffic was fairly heavy with trucks carrying non-agricultural machinery.)

We get back to camp at 6:11 p.m. Everyone is very tired and dirty. Mr. Melnikov is well, but not from vodka and salt. I clean up, change my clothes and pack. I am told that dinner will be at 10 p.m. and that we go to the plane at midnight.

I lay down on the cot to rest and doze off for a bit. Now this fatigue has really got me, so I don't go to the dinner. At 11:45 I get up and go to the dining room for a few minutes. Now I am told the plane is very late. So I return to my cot. And thus one day passes into another.

We are carried into a small room where a physician comes to look me over. She recommends activated charcoal, which I have been taking; but she suggests a heavier dose.

Now we find we have a 5-hour stopover here! We are given rooms in the airport hotel. I rest, but sleep very little. Some of the pain leaves but a part of it only goes into my head.

We have breakfast about 11 a.m., and then the wheels are up at 8:37 Moscow time.

The landscape here seems to be a complex forest-steppe.

Oh, what long and painful hours!

At the edge of the city I see many little low houses with roofs of soil and straw. I stop long enough to photograph one of the old-type wooden houses with carvings on it. (K-2660) (I seem to smell oil again; and this reminds me that when we got back to the main road the traffic was fairly heavy with trucks carrying non-agricultural machinery.)

We get back to camp at 6:11 p.m. Everyone is very tired and dirty. Mr. Melnikov is well, but not from vodka and salt. I clean up, change my clothes and pack. I am told that dinner will be at 10 p.m. and that we go to the plane at midnight.

I lay down on the cot to rest and doze off for a bit. Now this fatigue has really got me, so I don't go to the dinner. At 11:45 I get up and go to the dining room for a few minutes. Now I am told the plane is very late. So I return to my cot. And thus one day

passes into another.

August 16

Finally, the singing in the dining room stops about 2 a.m. Now that the damage has been done "Captain Bligh" is very friendly and tells the car driver to go slowly because of my stomach pains. We go over the same rough road and reach the airport at 2:45. No one seems to know when the late plane will actually come. I notice a lot of men here in very dirty, unpressed suits that watch us all the time both from the inside and outside of the little station. I am really miserable.

At 3:20 a.m. the wheels are up for Moscow where it is now 12:20 a.m.

The wheels are down again at Kustanay at 5:20. The boys in the blue serge suits come in to inspect the plane. I don't know why. The wheels are up at 6 a.m. and down again at Chelyabinsk at 7 a.m.

We are ushered into a small room where a physician comes to look me over. She recommends activated charcoal, which I have been taking; but she suggests a heavier dose.

Now we find we have a 5-hour stopover here! We are given rooms in the airport hotel. I rest, but sleep very little. Some of the pain leaves but a part of it only goes into my head.

We have breakfast about 11 a.m., and then the wheels are up at 8:37 Moscow time.

The landscape here seems to be a complex forest-steppe.

Oh, what long and painful hours!!

Oh, what long and painful hours!!

The landscape here seems to be a complex forest-steppe.

8:37 Moscow time.

We have breakfast about 11 a.m., and then the wheels are up at

pain leaves but a part of it only goes into my head.

in the airport hotel. I rest, but sleep very little. Some of the

Now we find we have a 5-hour stopover here! We are given rooms

taking; but she suggests a heavier dose.

look me over. She recommends activated charcoal, which I have been

We are ushered into a small room where a physician comes to

The wheels are up at 6 a.m. and down again at Chelyabinsk at 7 a.m.

blue serge suits come in to inspect the plane. I don't know why.

The wheels are down again at Kuzanay at 5:20. The boys in the

12:20 a.m.

At 3:20 a.m. the wheels are up for Moscow where it is now

I am really miserable. I am told that dinner will be at

the time both from the inside and outside of the little station.

a lot of men here in very dirty, unpressed suits that watch us all

one seems to know when the late plane will actually come. I notice

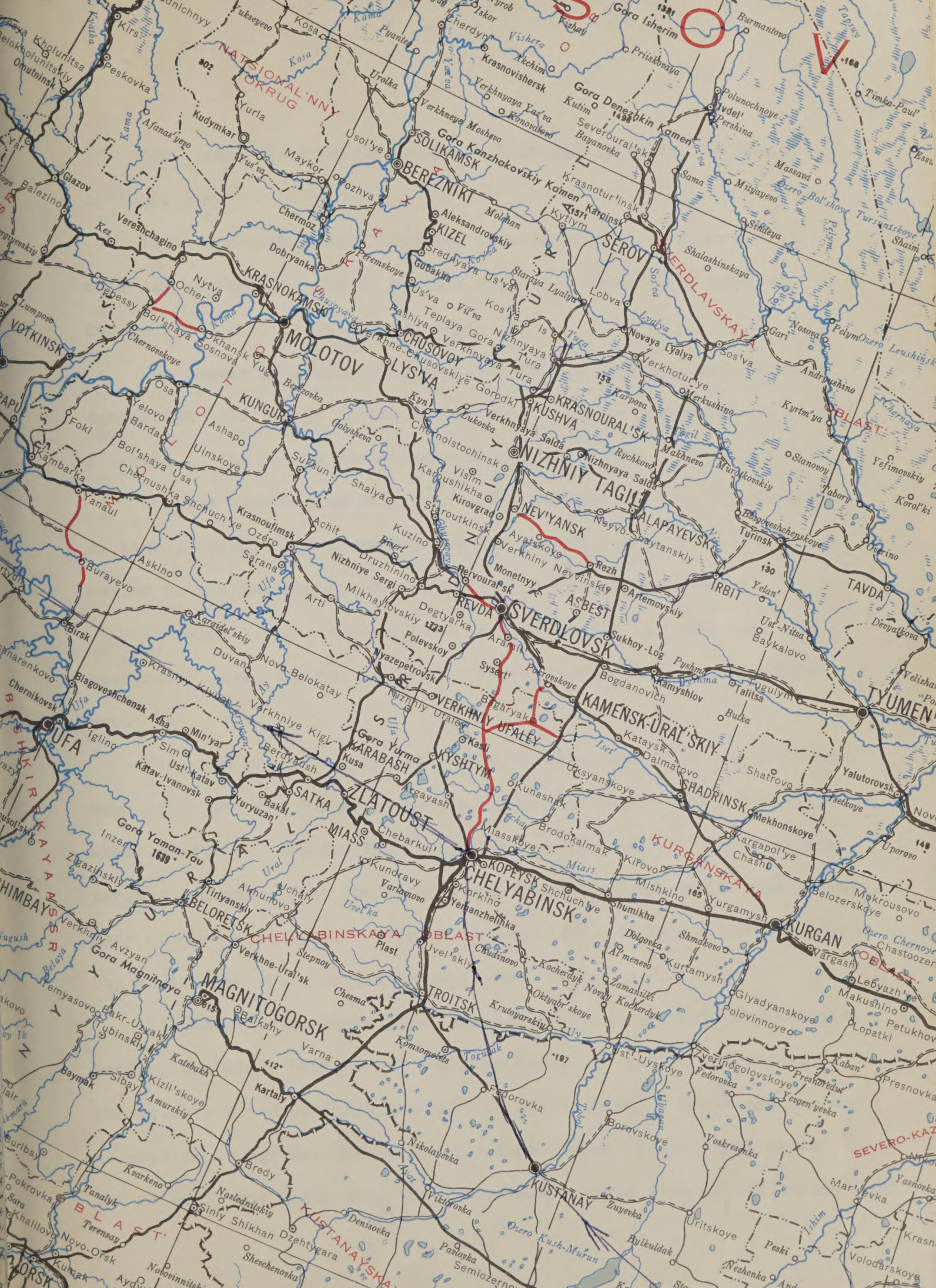
We go over the same rough road and reach the airport at 2:45. No

and tells the car driver to go slowly because of my stomach pains.

Now that the damage has been done "Captain Bligh" is very friendly

Finally, the singing in the dining room stops about 2 a.m.

August 16



The wheels are down in Kazan at 11:38 and up again for Moscow at 12:11 p.m.

These are such great distances between stops. What an ordeal this day has become. In 27 hours I suppose I have had a total of two hour's sleep, in little cat naps.

The wheels are down in Moscow at 2:56 p.m. We get away from the airport at 3:25 and go to the Moskva Hotel. After Akmolinsk the plumbing in the Moskva Hotel seems wonderful indeed.

We have dinner from 5:30 to 7 and I prepare for bed. I am still extremely tired. The stomach pains have eased. What a day! But one begins to realize the enormous vastness of this great country.

It seems to me now that I met few people the last few days who are really clean and really happy. Perhaps some of the young people are.

Most men above the rank of common laborer, and even many of these, wear suits on jobs for which people would wear slacks and jackets in other countries. Generally, the suits are about one or two sizes too large. Commonly, just the tips of the fingers extend out of the sleeves. Many of these suits are very much in need of cleaning and pressing. On the whole, the dress of the women is much better.

Of what I have seen of the "new lands" I can say that the soils are better, the crops better, and the science poorer than I had expected. The leaders are especially weak on the application of civil engineering as applied to agriculture, including farm roads. These earth roads are so dusty and muddy that they soon become lower than the adjoining land.

The wheels are down in Kazan at 11:38 and up again for Moscow

at 12:11 p.m.

These are such great distances between stops. What an ordeal

this day has become. In 27 hours I suppose I have had a total of

two hour's sleep, in little cat naps.

The wheels are down in Moscow at 2:56 p.m. We get away from the

airport at 3:25 and go to the Moskva Hotel. After Akmoinsk the

plumbing in the Moskva Hotel seems wonderful indeed.

We have dinner from 5:30 to 7 and I prepare for bed. I am still

extremely tired. The stomach pains have eased. What a day! But one

begins to realize the enormous vastness of this great country.

It seems to me now that I met few people the last few days who

are really clean and really happy. Perhaps some of the young people

are.

Most men above the rank of common laborer, and even many of these,

wear suits on jobs for which people would wear slacks and jackets in

other countries. Generally, the suits are about one or two sizes too

large. Commonly, just the tips of the fingers extend out of the sleeves.

Many of these suits are very much in need of cleaning and pressing. On

the whole, the dress of the women is much better.

Of what I have seen of the "new lands" I can say that the soils are

better, the crops better, and the science poorer than I had expected.

The leaders are especially weak on the application of civil engineering

as applied to agriculture, including farm roads. These earth roads

are so dusty and muddy that they soon become lower than the adjoining land.

And the mud continues to get worse. They must result in much damage to the farm trucks and high costs for transport.

And so to bed!

August 17

I feel very much better this morning. After breakfast we visit some of the bookstores where I buy some books to take home, mainly Russian classics in English. I do a little walking for pictures and make a few purchases in the Gum department store near the Red Square.

I have a conference with the delegation in order to get their ideas on what sort of things might be best to highlight in my discussions tomorrow at the Ministry.

I prepare some summaries and am early to bed.

I was especially interested in seeing the Russian phase of Impressionism. I buy a few reproductions. By far the nicest is Girl with peaches by V. Serov. (1887).

We go from the art gallery to our final conference in the Ministry of Agriculture. There are many people from the Ministry with Mr. Gennadi A. Barkov, Vice-Minister of Agriculture and in charge of the inspection of fertilizers, in the chair. Many others are present, including Professor Tyurin of the Academy.

Outline of Final Conference in Moscow

I open the discussion with sincere thanks to the Ministry for the excellent arrangements and especially for sending such an obviously

And the mud continues to get worse. They must result in much damage to the farm trucks and high costs for transport.

And so to bed!

August 17

I feel very much better this morning. After breakfast we visit some of the bookstores where I buy some books to take home, mainly Russian classics in English. I do a little walking for pictures and make a few purchases in the Gum department store near the Red Square.

I have a conference with the delegation in order to get their ideas on what sort of things might be best to highlight in my discussions tomorrow at the Ministry. I prepare some summaries and am early to bed.

August 18

Unhappily I didn't sleep well last night. Yesterday morning I easily got the hot water for tea but this morning it is difficult; but finally I overthrow the counter-revolution.

I have tea and then breakfast.

Bulik goes to the Embassy to take my soil samples and bring back the movies. He and Dr. Allaway were in such a hurry that they forgot the soil samples so I will have to go later.

Later in the morning we go to the Tretyakov Art Gallery. This is an all-Russian collection that was gathered together by a wealthy merchant. He gave the collection and his palace for housing it to the city of Moscow in 1892. It has been added to since then. It is one of the nicest galleries I have ever seen. We were fortunate to have an excellent guide, a lady who has spent many years as an art critic. I was especially interested in seeing the Russian phase of Impressionism. I buy a few reproductions. By far the nicest is Girl with peaches by V. Serov. (1887).

We go from the art gallery to our final conference in the Ministry of Agriculture. There are many people from the Ministry with Mr. Gennadi A. Barkov, Vice-Minister of Agriculture and in charge of the inspection of fertilizers, in the chair. Many others are present, including Professor Tyurin of the Academy.

Outline of Final Conference in Moscow

I open the discussion with sincere thanks to the Ministry for the excellent arrangements and especially for sending such an obviously

excellent arrangements and especially for sending such an obviously

I open the discussion with sincere thanks to the Ministry for the

Outline of Final Conference in Moscow

including Professor Tyurin of the Academy.

Inspection of fertilizers, in the chair. Many others are present,

Gennadi A. Barkov, Vice-Minister of Agriculture and in charge of the

of Agriculture. There are many people from the Ministry with Mr.

We go from the art gallery to our final conference in the Ministry

V. Serov. (1887).

I buy a few reproductions. By far the nicest is Girl with peaches by

I was especially interested in seeing the Russian phase of Impressionism.

an excellent guide, a lady who has spent many years as an art critic.

of the nicest galleries I have ever seen. We were fortunate to have

city of Moscow in 1892. It has been added to since then. It is one

chant. He gave the collection and his palace for housing it to the

an all-Russian collection that was gathered together by a wealthy mer-

Later in the morning we go to the Tretyakov Art Gallery. This is

the soil samples so I will have to go later.

the movies. He and Dr. Allaway were in such a hurry that they forgot

Bulik goes to the Embassy to take my soil samples and bring back

I have tea and then breakfast.

but finally I overthrow the counter-revolution.

I easily got the hot water for tea but this morning it is difficult;

Unhappily I didn't sleep well last night. Yesterday morning

August 18

well-qualified agricultural expert with us as Mr. Vasily Mikhailovich Melnikov and such an excellent interpreter as Mr. Edward Baranov.

We speak briefly of the excellent farms and water development near Andizhan; the high potentialities of the virgin lands near Akmolinsk; and the several excellent institutes with special reference to the institute for rice culture at Krasnodar and the institute for corn growing at Dnepropetrovsk.

The Vice-Minister asks me to speak very frankly of any criticisms or suggestions we might have. I discuss several suggestions as follows:

(1) Soil damage by water erosion is not so serious generally as in the United States, primarily because of differences in the character of the rainstorms, still there are important areas in the USSR where the erosion problem is becoming quite serious. In places where the streams are deeply trenched, gullies are working back into good soils. It is nearly always much easier and much less costly to prevent such erosion than it is to reclaim the eroded soils once the damage has been done. In most countries having advanced programs for erosion control, engineering methods are used to supplement erosion-resisting vegetation for control. We have seen many places in the USSR where diversion terraces and masonry chutes to the main drainage would be very helpful. Such works are needed along with the protective trees, shrubs, and grass.

(2) More specific experimental design to measure moderate differences in the effects of practices would be very helpful. Good

well-qualified agricultural expert with us as Mr. Vasily Mikhailovich

Meinikov and such an excellent interpreter as Mr. Edward Baranov.

We speak briefly of the excellent farms and water development

near Andzhan; the high potentialities of the virgin lands near

Akmoinsk; and the several excellent institutes with special reference

to the institute for rice culture at Krasnodar and the institute for

corn growing at Dnepropetrovsk.

The Vice-Minister asks me to speak very frankly of any criticisms

or suggestions we might have. I discuss several suggestions as follows:

(1) Soil damage by water erosion is not so serious generally as

in the United States, primarily because of differences in the character

of the rainstorms, still there are important areas in the USSR where

the erosion problem is becoming quite serious. In places where the

streams are deeply trenched, gullies are working back into good soils.

It is nearly always much easier and much less costly to prevent such

erosion than it is to reclaim the eroded soils once the damage has

been done. In most countries having advanced programs for erosion

control, engineering methods are used to supplement erosion-resisting

vegetation for control. We have seen many places in the USSR where

diversion terraces and masonry chutes to the main drainage would be

very helpful. Such works are needed along with the protective trees,

shrubs, and grass.

(2) More specific experimental design to measure moderate dif-

ferences in the effects of practices would be very helpful. Good

experimental design includes replications and randomization of plots in order to have adequate statistical treatment of the data. We feel that with good experimental design and well-carried out experiments several problems that are now subject to question and controversy could be clearly settled. Then too, adequate experimental design not only permits greater accuracy but also allows useful study of the interactions among several practices and weather conditions for the kinds of soil that are investigated.

(3) We saw considerable nitrogen deficiency on corn, potatoes, and other crops during our visit. We realize that part of this may result from the more-than-average rainfall of this year. We also recognize that more fertilizer plants are planned or are under construction to meet these needs. Then too, as the nitrogen and phosphorus levels in the soil are raised, deficiencies of potassium and the trace elements may be more apparent. We noted some examples of these also.

(4) More accurate and convenient methods for measuring the need of water in soils by plants are available than are being used in the USSR. Such instruments, including the tensiometer, are based on the concept of the energy required by the plant to extract the water from the soil. These newer energy concepts make possible a much wider use of experimental results. It is easy for field workers to read the tensiometers. We feel that weeds are a serious problem in many parts of the USSR and that herbicides could be used to great advantage.

experimental design includes replications and randomization of plots in order to have adequate statistical treatment of the data. We feel that with good experimental design and well-carried out experiments several problems that are now subject to question and controversy could be clearly settled. Then too, adequate experimental design not only permits greater accuracy but also allows useful study of the interactions among several practices and weather conditions for the kinds of soil that are investigated.

(3) We saw considerable nitrogen deficiency on corn, potatoes, and other crops during our visit. We realize that part of this may result from the more-than-average rainfall of this year. We also recognize that more fertilizer plants are planned or are under construction to meet these needs. Then too, as the nitrogen and phosphorus levels in the soil are raised, deficiencies of potassium and the trace elements may be more apparent. We noted some examples of these also.

(4) More accurate and convenient methods for measuring the need of water in soils by plants are available than are being used in the USSR. Such instruments, including the tensiometer, are based on the concept of the energy required by the plant to extract the water from the soil. These newer energy concepts make possible a much wider use of experimental results. It is easy for field workers to read the tensiometers.

(5) At Dnepropetrovsk the land-leveling machines that were demonstrated seemed to us a little small for best results. Nor was the field as carefully staked out for cuts and fills as many would do.

(6) The experimental drainage machines at Minsk seemed to us larger, heavier, and more costly than necessary for the work to be done.

(7) In several places, the drain lines seemed to us to be very much too far apart for adequate results. One example is the drainage system used in the "Hungry Steppe" near Tashkent. Here we believe that considerable additional drainage may be needed to prevent serious problems of salinity.

(8) Around Minsk it seemed to us that some of the peat soils are being over-drained, especially where drains are far apart. Where overdrained such soils subside a great deal, usually unevenly, and after a few years of cultivation, the surface soils are subject to blowing.

(9) Generally in the world, agriculturists are trying to reduce tillage as much as possible in order (a) to avoid costly operations and (b) to preserve soil structure. One useful way to reduce tillage is the use of herbicides. I explained recent developments in New York and Illinois for growing corn with only 2 to 3 operations, including harvest. We feel that weeds are a serious problem in many parts of the USSR and that herbicides could be used to great advantage.

parts of the USSR and that herbicides could be used to great advantage, including harvest. We feel that weeds are a serious problem in many New York and Illinois for growing corn with only 2 to 3 operations, is the use of herbicides. I explained recent developments in and (b) to preserve soil structure. One useful way to reduce tillage as much as possible in order (a) to avoid costly operations of weeding. Generally in the world, agriculturists are trying to reduce blowing. After a few years of cultivation, the surface soils are subject to overdrained such soils subside a great deal, usually unevenly, and being over-drained, especially where drains are far apart. Where (8) Around Minsk it seemed to us that some of the best soils are problems of salinity. That considerable additional drainage may be needed to prevent serious system used in the "Hungry Steppe" near Tashkent. Here we believe much too far apart for adequate results. One example is the drainage and (7) In several places, the drain lines seemed to us to be very done. (6) The experimental drainage machines at Minsk seemed to us would do. was the field as carefully staked out for cuts and fills as many demonstrated seemed to us a little small for best results. Nor (5) At Dnepropetrovsk the land-leveling machines that were

(10) After looking at many farms, it seems to us that the emphasis in agricultural training may be relatively too great on the big machines and too little on small machines and hand tools for the simpler tasks. Many of these necessary small tasks could be done far more efficiently. The taking of manure to the fields and spreading it is one example. Another is the fact that water for irrigation is well handled and measured to the farm; yet relatively poorer methods are used for handling the water within the farm.

(11) I tell the Vice-Minister that on the basis of what we have seen, it seems to us that potentialities are adequate for supplying all the meat, milk, butter, and other food products that the Soviet population requires.

(12) I say that I hope these current exchanges can be followed through by two additional arrangements:

i. An exchange of agricultural attaches, free to travel to any and all agricultural institutes; and

ii. A broadening of arrangements for student exchanges to include leading agricultural colleges in both countries.

He tells me that he agrees heartily with both suggestions.

I turned over two of our departmental movies - From the Ground up and Waters of Coweeta - that I had brought from the United States.

(Added later: I am told that members of the Ministry and of the Academy like these films very much and that "suitable" ones will be located and sent to me in return.)

(10) After looking at many farms, it seems to us that the

emphasis in agricultural training may be relatively too great

on the big machines and too little on small machines and hand

tools for the simpler tasks. Many of these necessary small tasks

could be done far more efficiently. The taking of manure to the

fields and spreading it is one example. Another is the fact that

water for irrigation is well handled and measured to the farm;

yet relatively poorer methods are used for handling the water within

the farm.

(11) I tell the Vice-Minister that on the basis of what we have

seen, it seems to us that potentialities are adequate for supplying

all the meat, milk, butter, and other food products that the Soviet

population requires.

(12) I say that I hope these current exchanges can be followed

through by two additional arrangements:

i. An exchange of agricultural attaches, free to travel to

any and all agricultural institutes; and

ii. A broadening of arrangements for student exchanges to

include leading agricultural colleges in both countries.

He tells me that he agrees heartily with both suggestions.

I turned over two of our departmental movies - From the Ground up

and Waters of Coweta - that I had brought from the United States.

(Added later: I am told that members of the Ministry and of the

Academy like these films very much and that "suitable" ones will

be located and sent to me in return.)

We also ask for samples of their phospho-bacterin and of azotogen, so widely used in the USSR, to take to the United States for testing under our conditions. Both are promised. (Added later: But we receive only the phospho-bacterin in time to take it with us.)

The meeting seems to go very well indeed. The Ministry staff are very cordial and pleasant.

Then we are back to the hotel where I give a luncheon to the American delegation along with Eddie and Mr. Melnikov.

In the evening we are taken to the circus in the Gorki Park for Culture and Rest. I suppose it is fairly good although I am not keen on these acrobatic acts. Most of the acrobats are from East Germany. One of the young women has a bad fall from a considerable height.

We return to the hotel and I am to bed at 11:15.

We also ask for samples of their phospho-bacterin and of azotogen, so widely used in the USSR, to take to the United States for testing under our conditions. Both are promised. (Added later: But we receive only the phospho-bacterin in time to take it with us.) The meeting seems to go very well indeed. The Ministry staff are very cordial and pleasant. Then we are back to the hotel where I give a luncheon to the American delegation along with Eddle and Mr. Melnikov.

In the evening we are taken to the circus in the Gorki Park for Culture and Rest. I suppose it is fairly good although I am not keen on these acrobatic acts. Most of the acrobats are from East Germany. One of the young women has a bad fall from a considerable height.

We return to the hotel and I am to bed at 11:15.

August 12

I am up.
Mr. Melnikov
the soil etc.
As soon as the
then to me.
have a film of
I learn that



K-2637. August 19, 1958. Moscow. A view from my hotel window.

At 10:00 a.m. we were to meet with the Intourist people to
settle our final accounts. We had to wait and wait. Melnikov

officials in
12:00 noon.

I hurried
records and
the Intourist
I have
and the people
looked well
of English
USSR.



K-2639. August 19, 1958. View of the Kremlin from my hotel window.

After lunch we went to the Intourist office and prepared the
courtesy letters. The Intourist office also prepared letters about the
and Edouard Boudier and arrange about receiving soil samples by air
and sending the boxes by sea pouch.

K-2637. August 19, 1958. Moscow. A view from my
hotel window.

K-2639. August 19, 1958. View of the Kremlin from
my hotel window.

August 19

I am up at 7 a.m. Everyone seems to be in good spirits. Mr. Melnikov tells me that the Vice-Minister and his staff and the soil scientists from the Academy like the films very much. As soon as they can find something appropriate they will forward them to me. (I had explained that I should very much like to have a film on shelterbelts. It wouldn't surprise me any should I learn that they make a special film in color to send to us.)

At 10:00 a.m. we were to meet with the Intourist people and settle our final accounts. We wait and wait. Melnikov calls many officials in the government and they finally agree to come at 12:00 noon.

I hurry out with Eddie for a little shopping and buy some records and tea. When I return to the hotel the arguments with the Intourist are going forward.

I have lunch with E. (Jeannie) S. Savinova, who was my guide and interpreter during my visit to the Soviet Union in 1945. She looks well and I think reasonably happy. She is working as a teacher of English to graduate students in the Academy of Sciences of the USSR.

After lunch I go to the American Embassy and prepare the usual courtesy letters to the Ministry and special letters about Mr. Melnikov and Eddie Baranov and arrange about returning soil samples by air and sending our books by sea pouch.

August 19

I am up at 7 a.m. Everyone seems to be in good spirits. Mr. Melnikov tells me that the Vice-Minister and his staff and the soil scientists from the Academy like the films very much. As soon as they can find something appropriate they will forward them to me. (I had explained that I should very much like to have a film on shelterbelts. It wouldn't surprise me any should I learn that they make a special film in color to send to us.) At 10:00 a.m. we were to meet with the Intourist people and settle our final accounts. We wait and wait. Melnikov calls many officials in the government and they finally agree to come at 12:00 noon.

I hurry out with Eddie for a little shopping and buy some records and tea. When I return to the hotel the arguments with the Intourist are going forward. I have lunch with E. (Jeannie) S. Savinova, who was my guide and interpreter during my visit to the Soviet Union in 1945. She looks well and I think reasonably happy. She is working as a teacher of English to graduate students in the Academy of Sciences of the USSR.

After lunch I go to the American Embassy and prepare the usual courtesy letters to the Ministry and special letters about Mr. Melnikov and Eddie Baranov and arrange about returning soil samples by air and sending our books by sea pouch.

Bulik stays at the Embassy and I return to the hotel. This business with Intourist is a mess. They overcharged us 4 full days apiece and say now it is too late in the day to get refunds from the bank!!! Then too, they refuse to take all of our extra meal coupons. But Melnikov does a real job with them and he gets the hotel manager here to give me back my money that I paid for the luncheon and take coupons. Then he calls somebody who insists that Intourist take our coupons for the big car bill that we have here in Moscow. Intourist gives each of us a slip that is supposed to be honored by American Express to give each of us \$60 for the 4 unused days. If I see half of that by next Easter I'll be satisfied. We have a real scramble then among ourselves to pay what we owe one another, to pay our bills, and to have just the right amount of rubles for tonight.

About 6:30 I have dinner with Savinova while the others have a huge and expensive banquet to use up the food coupons.

After a little walk to Pushkin Place, I am early to bed.

This has been about the worst day with all its silly waiting and discussions to settle what could have been done in thirty minutes.

our country or in western Europe. Here in this nice airport at Copenhagen it already seems as if we were practically home. We have both milk and tea and look at the beautiful silver and porcelain in the nice airport shops.

We leave Bulik and Doman at Copenhagen since they will remain in Europe for a few days.

At 10:35 the wheels are up on Scandinavian Airlines for London.

Bulik stays at the Embassy and I return to the hotel. This

business with Intourist is a mess. They overcharged us 4 full

days apiece and say now it is too late in the day to get refunds

from the bank!!! Then too, they refuse to take all of our extra

meal coupons. But Melnikov does a real job with them and he gets

the hotel manager here to give me back my money that I paid for

the luncheon and take coupons. Then he calls somebody who insists

that Intourist take our coupons for the big car bill that we have

here in Moscow. Intourist gives each of us a slip that is supposed

to be honored by American Express to give each of us \$60 for the

A unused days. If I see half of that by next Easter I'll be satis-

fied. We have a real scramble then among ourselves to pay what we

owe one another, to pay our bills, and to have just the right amount

of rubles for tonight.

About 6:30 I have dinner with Savinova while the others have a

huge and expensive banquet to use up the food coupons.

After a little walk to Pushkin Place, I am early to bed.

This has been about the worst day with all its silly waiting

and discussions to settle what could have been done in thirty minutes.

August 20

I am up at 4:30. There is gentle rain. The counter-revolution has failed completely; the maid brings me tea at this hour! We leave for the airport at 5:15 a.m.

Our Russian friends come with us and get us through this airport with all its many checks on tickets, excess baggage, passports, and all the rest. The whole thing is a sort of mystery to me. Yet it gets done and I have some breakfast.

It is with real regret that we leave Mr. Melnikov and Eddie. They have been extremely helpful.

At this point Mr. Melnikov reminds me that within the Soviet Union we traveled 10,000 kilometers by air and 3,000 by car, not counting the many trips from the various centers to the farms and institutes.

We go into the big jet plane and the wheels are in the air for Copenhagen at 7:30. They are down at Copenhagen at 7:32 a.m. (9:32 Moscow time).

Although few trips could have been more interesting than this one to the Soviet Union, customs there are quite different than in our country or in western Europe. Here in this nice airport at Copenhagen it already seems as if we were practically home. We have both milk and tea and look at the beautiful silver and porcelain in the nice airport shops.

We leave Bulik and Donnan at Copenhagen since they will remain in Europe for a few days.

At 10:35 the wheels are up on Scandinavian Airlines for London.

August 20

I am up at 4:30. There is gentle rain. The counter-revolution has failed completely; the maid brings me tea at this hour! We leave for the airport at 5:15 a.m.

Our Russian friends come with us and get us through this airport with all its many checks on tickets, excess baggage, passports, and all the rest. The whole thing is a sort of mystery to me. Yet it gets done and I have some breakfast.

It is with real regret that we leave Mr. Melnikov and Eddie. They have been extremely helpful.

At this point Mr. Melnikov reminds me that within the Soviet Union we traveled 10,000 kilometers by air and 3,000 by car, not counting the many trips from the various centers to the farms and institutes.

We go into the big jet plane and the wheels are in the air for Copenhagen at 7:30. They are down at Copenhagen at 7:32 a.m. (9:32 Moscow time).

Although few trips could have been more interesting than this one to the Soviet Union, customs there are quite different than in our country or in western Europe. Here in this nice airport at Copenhagen it already seems as if we were practically home. We have both milk and tea and look at the beautiful silver and porcelain in the nice airport shops.

We leave Bulik and Donnan at Copenhagen since they will remain in Europe for a few days.

At 10:35 the wheels are up on Scandinavian Airlines for London.

I complete a series of short notes I began in my notebook on first-hand impressions in the Soviet Union:

1. The great friendliness of the people.
2. Excess of labor on many farms.
3. Mechanization is being pushed a bit too fast for some communities, while the smaller tasks are done by very old-fashioned methods.
4. So much emphasis on machines leads to neglect of hand work, such as weeds in odd places, and the like. Few farms are neat.
5. The weed problem is very serious: (a) reduces yields and (b) results in excess tillage, which, in turn, reduces the quality of soil structure.
6. Generally, the country road system is very poor. Roads are rough, dusty, and muddy. Large trucks cannot be used and small ones are badly shaken. Even main roads have asphalt surfaces without proper subgrade. Enough wear and tear on machines could be saved to pay for proper roads.
7. All jobs on farms and all farms have "norms" and bonuses for over-fulfilling the "plan." Of course all workers and farm managers seek to have low "norms" so they can have bonuses. I did not see abuses but there are obvious opportunities for bribery among farm managers and officials of the rayons and oblasts that set the farm norms.
8. All officials are extremely anxious to make a good impression. Every inadequacy that we would be likely to notice is pointed out in advance and explained.

I complete a series of short notes I began in my notebook on

first-hand impressions in the Soviet Union:

1. The great friendliness of the people.
2. Excess of labor on many farms.
3. Mechanization is being pushed a bit too fast for some communities, while the smaller tasks are done by very old-fashioned methods.
4. So much emphasis on machines leads to neglect of hand work, such as weeds in odd places, and the like. Few farms are neat.
5. The weed problem is very serious: (a) reduces yields and (b) results in excess tillage, which, in turn, reduces the quality of soil structure.
6. Generally, the country road system is very poor. Roads are rough, dusty, and muddy. Large trucks cannot be used and small ones are badly shaken. Even main roads have asphalt surfaces without proper subgrade. Enough wear and tear on machines could be saved to pay for proper roads.
7. All jobs on farms and all farms have "norms" and bonuses for over-fulfilling the "plan." Of course all workers and farm managers seek to have low "norms" so they can have bonuses. I did not see abuses but there are obvious opportunities for bribery among farm managers and officials of the rayons and oblasts that set the farm norms.
8. All officials are extremely anxious to make a good impression. Every inadequacy that we would be likely to notice is pointed out in advance and explained.

9. Commonly, when a suggestion is made by one of us the remark is, "Yes, we are doing that," but in some distant place, or "We plan to do that during next season."

10. Obviously the struggle to get ahead within the bureaucracy is terrific - something like the struggle among some American business men to make money primarily for the sake of the power it gives them.

11. They try very hard - almost too hard - for the big effect perhaps more for the symbol than for the substance. Thus a large undertaking may look bad in western eyes from the accidental omission of items we take for granted. This struggle for the symbols of progress indicates some sort of inferiority complex.

12. The farm people will come along well if given a chance. The transfer of machines to the farms and the better prices are bound to help. Certainly they want peace: their memory of the last war is keen and horrible. They want more comforts. But country people are too many and policy is controlled more by city people and by trade union leaders within the Communist Party.

13. The main soil problems:

(a) Irrigation

i. Silting

ii. Salinity

iii. Drainage

(b) Drainage of peat soil.

(c) Rice land preparation.

(d) Erosion control.

9. Commonly, when a suggestion is made by one of us the remark is, "Yes, we are doing that," but in some distant place, or "We plan to do that during next season."

10. Obviously the struggle to get ahead within the bureau-crazy is terrific - something like the struggle among some American business men to make money primarily for the sake of the power it gives them.

11. They try very hard - almost too hard - for the big effect perhaps more for the symbol than for the substance. Thus a large undertaking may look bad in western eyes from the accidental omission of items we take for granted. This struggle for the symbols of progress indicates some sort of inferiority complex.

12. The farm people will come along well if given a chance. The transfer of machines to the farms and the better prices are bound to help. Certainly they want peace: their memory of the last war is keen and horrible. They want more comforts. But

country people are too many and policy is controlled more by city people and by trade union leaders within the Communist Party.

13. The main soil problems:

(a) Irrigation

(b) Salting

(c) Salinity

(d) Drainage

(e) Drainage of peat soil.

(f) Rice land preparation.

(g) Erosion control.

(Research and application both poor, especially on engineering phases.)

(e) Soil blowing. (Generally not greatly serious.)

(f) Over cultivation.

(g) Fertilization, but progress is good.

14. Nearly all agriculturists in the USSR know the system of soil classification - certainly to a far greater degree than comparable agriculturists in the USA. Some soil maps are excellent; others not so good. The maps of farms are less detailed than ours, and are line maps.

15. I was amazed to see the extent of new construction, which goes on everywhere. It is remarkable how they have been able to reconstruct the cities, towns, and villages destroyed by the Germans. The destruction might be comparable to 60 to 75 percent destruction of all houses, factories, museums, universities, and so on east of the Mississippi River in this country. In nearly every town and city one sees great steel cranes on the skyline building large structures of all kinds.

16. The enormous effort being put into education and into research is impressive. Hard-working students are paid while in the technical schools or universities.

17. Soviet scientists are far more familiar with our scientific publications than Americans are with theirs because of the excellent abstracting and translation services.

(Research and application both poor, especially on engineering

phases.)

(e) Soil blowing. (Generally not greatly serious.)

(f) Over cultivation.

(g) Fertilization, but progress is good.

14. Nearly all agriculturists in the USSR know the system of

soil classification - certainly to a far greater degree than com-

parable agriculturists in the USA. Some soil maps are excellent;

others not so good. The maps of farms are less detailed than ours,

and are fine maps.

15. I was amazed to see the extent of new construction, which

goes on everywhere. It is remarkable how they have been able to

reconstruct the cities, towns, and villages destroyed by the Germans.

The destruction might be comparable to 60 to 75 percent destruction

of all houses, factories, museums, universities, and so on east of

the Mississippi River in this country. In nearly every town and city

one sees great steel cranes on the skyline building large structures

of all kinds.

16. The enormous effort being put into education and into

research is impressive. Hard-working students are paid while in

the technical schools or universities.

17. Soviet scientists are far more familiar with our scientific

publications than Americans are with theirs because of the excellent

abstracting and translation services.

18. The Soviet people are intelligent and hard working. They want more comforts and I feel sure that war would be very unwelcome; and so would a strong Germany.

Although very hard to do now I try to summarize what I may have learned of direct application to US agriculture:

1. Highly adequate laboratories and other facilities for research and teaching in soil science have been constructed, even in areas scorched by the war only 13 years ago.

2. Excellent services are provided for giving agricultural abstracts scientists and translations of foreign research papers and scientific books.

3. Excellent planning to avoid the use of soils for cultivation that are subject to erosion or soil blowing.

4. Women are trained in soil science and other phases of agriculture. Many women hold responsible positions in these fields.

5. All agriculturists, and especially agronomists, are given thorough training in the national scheme of soil classification.

6. The azotogen and phospho-bacterin used widely to treat seeds may have usefulness in the United States.

7. Some new devices for measuring water in irrigation canals may be useful here.

8. A new type of horizontal turbine seen at Tashkent may be useful.

9. In the "new lands" recent experience suggests widely spaced windbreaks of trees in double rows, separated by rows of shrubs.

18. The Soviet people are intelligent and hard working. They want more comforts and I feel sure that war would be very unwelcome; and so would a strong Germany.

Although very hard to do now I try to summarize what I may

have learned of direct application to US agriculture:

1. Highly adequate laboratories and other facilities for research and teaching in soil science have been constructed, even in areas scorched by the war only 13 years ago.

2. Excellent services are provided for giving agricultural scientists and translations of foreign research papers and scientific books.

3. Excellent planning to avoid the use of soils for cultivation that are subject to erosion or soil blowing.

4. Women are trained in soil science and other phases of agriculture. Many women hold responsible positions in these fields.

5. All agriculturists, and especially agronomists, are given thorough training in the national scheme of soil classification.

6. The azotogen and phospho-bacterin used widely to treat seeds may have usefulness in the United States.

7. Some new devices for measuring water in irrigation canals may be useful here.

8. A new type of horizontal turbine seen at Tashkent may be useful.

9. In the "new lands" recent experience suggests widely spaced windbreaks of trees in double rows, separated by rows of shrubs.

10. On many farms, the early snow is ridged in the fields to help hold additional snow.

11. Occasional rows of sunflowers have been found helpful in holding snow on the fields.

The wheels are down again in London at 1:16 p.m.

We transfer over to the Pan American office and get our baggage reasonably well straightened out. I find that the Embassy in Moscow did not check our tickets through as they said they would. We will have space but there is uncertainty about sleepers. A courteous young man at the desk says he can promise me one personally but that he can't do it officially until we are ready to sail.

Nelson and Cline remain at the airport while Thorne, Allaway, and I take a quick trip to the City.

We have a few minutes at Liberty's on Regent Street. It seems very good to get another glimpse of the heart of London. It is a great pity we must hurry back.

I try to call the Muirs but no one answers. Finally we all get berths except Dr. Cline, who insists he doesn't mind.

The wheels are in the air for New York at 7:20. As usual, dinner drags out for a long time. But I finally get to bed about 10:30 p.m. (or 5:30 N. Y. time.)

10. On many farms, the early snow is ridged in the fields to

help hold additional snow.

11. Occasional rows of sunflowers have been found helpful in

holding snow on the fields.

The wheels are down again in London at 1:16 p.m.

We transfer over to the Pan American office and get our baggage

reasonably well straightened out. I find that the Embassy in Moscow

did not check our tickets through as they said they would. We will

have space but there is uncertainty about sleepers. A courteous

young man at the desk says he can promise me one personally but that

he can't do it officially until we are ready to sail.

Nelson and Cline remain at the airport while Thorne, Allaway,

and I take a quick trip to the City.

We have a few minutes at Liberty's on Regent Street. It seems

very good to get another glimpse of the heart of London. It is a

great pity we must hurry back.

I try to call the Muffs but no one answers. Finally we all get

perthe except Dr. Cline, who insists he doesn't mind.

The wheels are in the air for New York at 7:20. As usual, dinner

drags out for a long time. But I finally get to bed about 10:30 p.m.

(or 5:30 N. Y. time.)

August 21

I sleep for five hours as one day has turned into the next. We have been in and out of the airport at Iceland. The stewardess gives me a glass of milk with which I wash down 2 sleeping tablets and go back to bed. I am up at 4:30 after a good long rest.

The wheels are down at Idlewild in New York at 7:20 a.m.

We are through customs easily and over to American Airlines.

We are scheduled to leave at 8:45 but the plane is delayed.

The arrangements for going through customs at Idlewild are very convenient now but the airport otherwise is dirty, noisy, scattered about, and badly overcrowded.

Finally the wheels are in the air for Washington at 9:52 and down in Washington airport at 11:10.

Mrs. Kellogg meets me. Oh it is so good to be once more back home.

oOo

August 21

I sleep for five hours as one day has turned into the next.

We have been in and out of the airport at Iceland. The stewardess gives me a glass of milk with which I wash down 2 sleeping tablets

and go back to bed. I am up at 4:30 after a good long rest.

The wheels are down at Idlewild in New York at 7:20 a.m.

We are through customs easily and over to American Airlines.

We are scheduled to leave at 8:45 but the plane is delayed.

The arrangements for going through customs at Idlewild are very

convenient now but the airport otherwise is dirty, noisy, scattered

about, and badly overcrowded.

Finally the wheels are in the air for Washington at 9:52 and

down in Washington airport at 11:10.

Mrs. Kellogg meets me. Oh it is so good to be once more back

home.

oo

SOME APPROXIMATE CONVERSIONS

		Yield per acre in American units						
Yield		Potatoes	Sugarbeets,	Wheat	Corn	Oats	Rice	Cotton
Per Hectare		bu.2/	tons	bu.3/	bu.4/	bu.5/	bu.6/	bales, lint7/
(Metric)	Pounds							
1 ton1/	892.55	14.8		14.8	15.9	27.9	19.8	.62
2 tons	1,785.10	29.7		29.7	31.9	56.0	39.7	1.25
3 tons	2,677.56	44.6		44.6	47.8	83.7	59.5	1.87
4 tons	3,570.20	59.5		59.5	63.1	111.6	79.3	2.51
5 tons	4,462.75	74.4	2.23	74.4	79.7	139.5	99.2	3.13
	<u>Tons</u>							
10 tons	4.47	148.8	4.47					
20 tons	8.93		8.93					
40 tons	17.86		17.86					
50 tons	22.32		22.32					

CONVERSION TABLE

One kilometer	=	.62137 mile
One meter	=	39.37 inches
One centimeter	=	.3937 inch
One millimeter	=	.03937 inch
One inch	=	2.54 centimeters
One liter	=	1.0567 quarts
A liter of water	=	2.2046 pounds
One cubic meter	=	1.308 cubic yards
One centner	=	220.46 pounds
One metric ton	=	2,204.6 pounds
One hectare	=	2.47 acres
One acre	=	.4047 hectare

1/ Metric ton
2/ 60 pounds
3/ 60 pounds
4/ 56 pounds
5/ 32 pounds
6/ 45 pounds
7/ 35% conversion

Carbon and nitrogen values were obtained on a few soil samples.

Dr. L. T. Alexander gave me the data late in December 1958, as follows:

	N percent	C percent	C/N ratio
Poltava: Slightly washed Gray-Forest soil, 0-4"	0.173	1.87	10.8
Poltava: Chernozem, 0-12"	0.276	3.77	13.6
Tashkent: Sierozem, 0-4"	0.120	1.19	9.9
Akmolinsk: Chestnut, 0-4"	0.297	4.03	13.6
Akmolinsk: Chernozem, 0-4"	0.389	4.60	11.8

Carbon and nitrogen values were obtained on a few soil samples.

Dr. I. T. Alexander gave me the data late in December 1958, as follows:

	N percent	C percent	C/N ratio
Akmolinsk: Chernozem, 0-4"	0.389	4.60	11.8
Akmolinsk: Chestnut, 0-4"	0.297	4.03	13.6
Tashkent: Sierozem, 0-4"	0.120	1.19	9.9
Poltava: Chernozem, 0-12"	0.276	3.77	13.6
Poltava: Slightly washed Gray-Forest soil, 0-4"	0.173	1.87	10.8

СЕЛЬСКОЕ ХОЗЯЙСТВО

Орган Министерства сельского хозяйства СССР и ЦК профсоюза
рабочих и служащих сельского хозяйства и заготовок

№ 172 (8120)

Среда, 23 июня 1958 года

Цена 20 коп.

Американские почвоведы в Москве

Третья американская сельскохозяйственная делегация, в которую входят специалисты по вопросам использования почвенных и водных ресурсов, была принята в Министерстве сельского хозяйства СССР членом президиума ВАСХНИЛ академиком А. Н. Аскоценским. На встрече, на которой присутствовала также группа ответственных работников министерства, американские гости высказали пожелания о том, какие районы страны, научные и опытные учреждения, а также колхозы и совхозы они хотели бы посетить. На основе этих пожеланий был уточнен окончательный план поездки специалистов сельского хозяйства США по нашей стране.

С большим интересом американские специалисты познакомились со Всесоюзной сельскохозяйственной выставкой. В павильоне «Водное хозяйство» они провели около двух часов. На все свои многочисленные вопросы они получили здесь исчерпывающие ответы.

Члены делегации посетили Всесоюзную академию сельскохозяйственных наук имени В. И. Ленина. Главный ученый секретарь президиума академии профессор доктор И. И. Синягин познакомил гостей со структурой академии и с основными направлениями ее деятельности, в особенности в области почвоведения и ирригации. Затем состоялась беседа.

— Что советские ученые считают главным в борьбе с засухой и в деле улучшения водного режима почвы? — спросил член делегации Джозеф Булик.

По просьбе гостей на этот вопрос подробно ответил заместитель директора Всесоюзного научно-исследовательского института удобрений и агропочвоведения доктор В. А. Францессон. Он охарактеризовал два основных направления этой работы, которая состоит прежде всего в повышении весенних запасов влаги в почве и в улучшении использования летних осадков, а также в преодолении атмосферной засухи.

Заместитель академика-секретаря Отделения земледелия академии проф. Н. С. Соколов, удовлетворяя интерес го-

стей, остановился на значении глубокой безотвальной вспашки.

Отвечая на вопрос инженера Вильяма Доннана, заместитель председателя Совета по разработке системы земледелия по зонам страны кандидат сельскохозяйственных наук В. П. Сотников и принявший участие в беседе заместитель начальника Главводхоза В. М. Мельников осветили некоторые вопросы ирригационного строительства в СССР. Особый интерес гостей вызвал тот факт, что государство берет на себя крупные расходы, связанные с осуществлением этих работ.

Много впечатлений, по заявлению д-ра Чарльза Келлога, американские специалисты вынесли из посещения Института почвоведения имени Докучаева Академии наук СССР, где их принял директор института академик И. В. Тюрин. В беседе приняли участие советские ученые, работы которых широко известны за рубежом, — профессора доктора В. А. Ковда, Н. И. Горбунов, Е. В. Лобова, Ю. А. Поляков, А. В. Соколов и другие.

В оживленной беседе американские гости узнали об обширных работах, которые ведет институт в области повышения плодородия и защиты почв и в разработке научных методов их изучения. Рассмотрев большую почвенную карту Советского Союза, которая висит в кабинете И. В. Тюрина, делегация узнала, что полевые экспедиции советских почвоведов можно сегодня встретить в самых различных уголках страны.

Профессор А. В. Соколов, рассказав о некоторых работах с радиоактивными изотопами в сельском хозяйстве, отметил, что они дали другие результаты, чем у отдельных ученых США.

Инженер Вильям Доннан сообщил, что в США с помощью радиоактивного кобальта определяют влажность почв. Ему сообщили, что этот метод используется и сотрудниками Института почвоведения, а сейчас они его совершенствуют.

Американские ученые продолжают знакомиться с работой интересующих их научных сельскохозяйственных учреждений.

П. ШЕЛЕСТ.

СЕЛЬСКОЕ ХОЗЯЙСТВО

Орган Министерства сельского хозяйства СССР и ЦК профсоюза
рабочих и служащих сельского хозяйства и заготовок

№ 174 (8122)

Пятница, 25 июля 1958 года

Цена 20 коп.

Встреча почвоведов с учеными

Американская делегация почвоведов ознакомилась в Москве с рядом научных, а также учебных заведений, готовящих кадры для сельского хозяйства. В Московской сельскохозяйственной академии имени К. А. Тимирязева делегацию принял ректор академии профессор Г. М. Лоза. Американских ученых, среди которых имеются преподаватели высших учебных заведений, особенно интересовали подробности организации учебного процесса в этом крупнейшем центре сельскохозяйственного образования. На вопросы гостей отвечали профессор Г. М. Лоза, проректор по научной работе профессор В. Е. Егоров, профессор А. В. Петербургский и другие.

Члены делегации получили в подарок книги, в которых опубликованы результаты научных исследований сотрудников академии. Д-р Давид Торн заметил, что возглавляемая им в штате Юта опытная сельскохозяйственная станция издает научные бюллетени; нельзя ли, сказал он, организовать с академией обмен научными изданиями. Ректор академии выразил готовность наладить такого рода обмен.

Продолжительное время члены делегации провели в почвенно-агрономическом музее имени Вильямса. Они внимательно

но осмотрели собранную здесь уникальную коллекцию почвенных монолитов нашей страны.

В Московском государственном университете имени Ломоносова американских почвоведов принял член-корреспондент Академии наук СССР заведующий кафедрой почвоведения и почвенным отделением биолого-почвенного факультета профессор В. А. Ковда. В развернувшейся оживленной беседе приняли участие видные советские ученые: член-корреспондент Академии наук СССР Н. А. Красильников, профессора Д. Г. Вилевский, С. А. Владыченский и другие.

Затем гостям из-за океана была представлена возможность осмотреть богатейшие лаборатории факультета, оснащенные отечественной аппаратурой.

Американские специалисты побывали также во Всесоюзном научно-исследовательском институте удобрений и агропочвоведения, где их принял доктор сельскохозяйственных наук В. А. Францесон.

После пяти дней пребывания в столице американская делегация почвоведов выехала в Минск.

П. ШЕЛЕСТ.

СЕЛЬСКОЕ ХОЗЯЙСТВО

Орган Министерства сельского хозяйства СССР и ЦК профсоюза
рабочих и служащих сельского хозяйства и заготовок

№ 181 (8129)

Суббота, 2 августа 1958 года

Цена 20 коп.

★ ★ ★

II. По земле цветущей Украины

Американская делегация специалистов в области использования почвенных и водных ресурсов ознакомилась с общественным хозяйством артели «Жовтень» Броварского района Киевской области. Прежде всего делегаты попросили почвенную карту колхоза, из которой узнали, что здесь в основном легкие суглинки и частично глеевые почвы с близкими грунтовыми водами.

— Таких почв в США немало, — сказал доктор Вильям Эллоуэй.

По просьбе гостей председатель колхоза тов. Ковбасинский рассказал, как колхозники повышают плодородие своих почв.

В колхозном плодпитомнике, раскинувшись на 50 гектарах, американцы захотели узнать, как здесь борются с опасной болезнью груш — паршой.

— У нас эта болезнь давно побеждена, — сказал им колхозный садовод В. Н. Рогач.

Главное, что интересовало американских почвоведов при посещении Полтавской области, — это борьба с эрозией почв. Опыт передовых колхозов, совхозов и станций Полтавщины дал им по этому вопросу богатый материал.

В этом гости из-за океана убедились еще в ста километрах от областного центра, остановившись возле дороги, на полях колхоза «40 лет Октября» Решетилковского района. Американские почвоведы увидели лесные полосы, защищающие склоны от эрозии. На другой стороне автостреды, где на 700 гектарах раскинулись земли колхоза имени Сталина, они сфотографировали приовражные лесополосы, предупреждающие смыв пахотного слоя в долине реки Гофты.

В колхозе имени Сталина Полтавского района, куда вскоре прибыла делегация, пояснения давал председатель артели И. С. Дьяконенко. Многие жители села Головач помнят, сказал он, как свирепствовали в этих местах пески, засыпая поля и деревни. Леса обезвреживали их. В долине реки Ворсклы колхозники закрепили пески посадками ивы, сосны. Теперь в колхозе 580 гектаров под лесом, из них свыше 300 гектаров посажены руками членов артели.

Отвечая на вопрос Вильяма Эллоуэя, председатель артели сообщил, что на возрожденных землях они получают по 40—50 центнеров зерна кукурузы и по 400—500 центнеров свеклы с гектара.

— Очень хороший урожай! — отозвались американцы.

Более пяти часов провели американские специалисты на Полтавской опытной сельскохозяйственной станции, которая изучает вопросы повышения плодородия почв, занимается селекцией и семеноводством.

— Не случайно, — сказал во время беседы с делегатами директор станции М. В. Кузьменко, — что именно Полтавщина является родиной многих отечественных сортов сельскохозяйственных культур.

— Да, у нас в США известны некоторые сорта полтавской люцерны, — подтверждает Вильям Эллоуэй.

На Полтавской станции гости ознакомились с различными методами борьбы с эрозией, в частности с чересполосным использованием склонов. Станция оказывает большую помощь колхозам, в частности в составлении почвенных карт. К этому делу у американцев повышенный интерес. Доктор Чарльз Келлог внимательно изучил почвенную карту колхоза «Партизан» Семеновского района, составленную с помощью работников станции, картограмму рационального использования земли и записку с обоснованием агротехнических приемов.

Отвечая на вопрос тов. Кузьменко, доктор Келлог сообщил, что в США почвенные карты составляют путем аэрофотосъемок. Потом их увеличивают, раскрашивают по производственным группам и публикуют. Что касается рекомендаций относительно хозяйственного использования земель, то они носят в основном общий характер. Фермеру сообщают, нуждаются ли почвы в известковании, как они реагируют на удобрение.

Американские почвоведы продолжают свою поездку по Советскому Союзу.

II. ШЕЛЕСТ.

(Спец. корр. «Сельского хозяйства»).

Полтава.

СЕЛЬСКОЕ ХОЗЯЙСТВО

Орган Министерства сельского хозяйства СССР и ЦК профсоюза
рабочих и служащих сельского хозяйства и заготовок

№ 183 (8131)

Вторник, 5 августа 1958 года

Цена 20 коп.

На берегах Каховского моря

Американские почвоведы посетили колхоз имени Орджоникидзе Никопольского района Днепропетровской области, владения которого раскинулись в приднепровских степях на семи тысячах гектаров. Сад колхоза орошается водами Каховского моря. Яблони и груши здесь сплошь усеяны плодами.

У дамбы, перегородившей недалеко от колхозного сада Каховское море, американцев ожидал специальный катер. Они перебрались на нем, минуя Никополь, в Каменку-на-Днепре, расположенную уже на территории Запорожской области. Здесь американская делегация автобусом проехала около 30 километров, чтобы побывать в совхозе «Днепровский».

Это хозяйство славится не только фруктами, но и разнообразными овощами и продуктами животноводства. Высокой товарности совхоз добился благодаря орошению, которое проводит на 6.000 гектаров. В пойме рек Днепр и Конка устроена оросительная сеть с постоянными каналами. Изучив схему оросительных систем массива Каменский Под, гости осмотрели на берегу Каховского моря Ивановскую насосную станцию. Начальник управления оросительных систем Ф. А. Черный ответил на все их вопросы.

Американские специалисты наблюдали полив овощей дождеванием. Мощная струя длиной в 60 метров, вырвавшись из установки «ДДП-С45», рассыпалась мириадами брызг. Гости заинтересовались дождевальными установками.

— В нашем совхозе уже 20 таких установок, — сообщил им директор совхоза А. А. Колесников.

Посещением Днепропетровской и Запорожской областей специалисты из США закончили знакомство с сельским хозяйством Украины.

— Мы многое слышали о гостеприимстве украинского народа, но действительность превзошла наши ожидания, — заявил руководитель делегации доктор Чарльз Келлог.

П. ШЕЛЕСТ.

(Спец. корр. «Сельского хозяйства»).

СЕЛЬСКОЕ ХОЗЯЙСТВО

Орган Министерства сельского хозяйства СССР и ЦК профсоюза
рабочих и служащих сельского хозяйства и заготовок

№ 189 (8137)

Вторник, 12 августа 1958 года

Цена 20 коп.

Почвоведы и ирригаторы в Узбекистане

Во время посещения американской делегацией Среднеазиатского института ирригации директор института Ф. Н. Наджимов ознакомил гостей с работой многочисленных лабораторий института, в котором трудится 500 научных сотрудников. В гидротехнической лаборатории американцы заинтересовались моделью водозаборного узла, сооружаемого на реке Чирчик. Особое криволинейное устройство, создающее в канале поперечную циркуляцию воды, отводит наносы в реку. Над решением проблемы борьбы с наносами в каналах трудятся и американские ученые-инженеры. Поэтому делегация внимательно знакомилась с опытом специалистов Узбекистана.

Через некоторое время американцы выехали автобусом в Голодную степь. Некогда путники, направляясь по этой дороге, запасались на сотни километров водой не только для себя, но и для животных. А сейчас здесь все изменилось.

— Раньше тут росла верблюжья колючка, а теперь, как видите, раскинулись плодородные поля хлопчатника, зацвели плодовые сады и виноградники, — сказал, обращаясь к американским специалистам, Асадулла Убайдуллаходжаев — председатель колхоза имени Ахунбабаева Сыр-Дарьинского района, на усадьбу которого свернул автобус с американской делегацией.

Во время беседы руководитель делегации доктор Чарльз Келлог спросил председателя колхоза:

— Кто финансирует гидротехническое строительство в Голодной степи?

— Государство.

— А за воду колхозникам в конечном счете придется платить?

— Нет, вода у нас бесплатная. Кроме того, государство предоставило большие льготы крестьянам, переселившимся сюда.

Тов. Убайдуллаходжаев сообщил далее, что в прошлом году колхоз получил около 17 миллионов рублей дохода. Урожай хлопчатника на освоенных полях достиг 35 центнеров с гектара. Колхоз имеет 40 тракторов, 18 автомобилей, свою электростанцию и т. д.

Американцы, несмотря на палящий зной, долго ходили по цветущим полям артели, осмотрели дренажный канал, посева.

После возвращения из Голодной степи американские специалисты посетили Среднеазиатский научно-исследовательский институт механизации и электрификации орошаемого земледелия, где осмотрели образцы новых машин для хлопководства. Они также встретились с научными сотрудниками Среднеазиатского отделения Всесоюзного института растениеводства, побывали на Ак-Кавакской центральной агротехнической опытной станции Всесоюзного научно-исследовательского института хлопководства. На этой станции американцы осмотрели лаборатории и поля, ознакомились с новыми методами получения высокого урожая хлопчатника, разработанными коллективом станции.

Покидая Ак-Кавакскую опытную станцию, руководитель американской делегации доктор Чарльз Келлог оставил в книге отзывов запись, в которой выражается уверенность, что работы научных сотрудников станции приведут к дальнейшему росту производства хлопка в Узбекистане.

П. ШЕЛЕСТ.

(Спец. корр. «Сельского хозяйства»)
Ташкент.

СЕЛЬСКОЕ ХОЗЯЙСТВО

Орган Министерства сельского хозяйства СССР и ЦК профсоюза
рабочих и служащих сельского хозяйства и заготовок

№ 192 (8140)

Пятница, 15 августа 1958 года

Цена 20 коп.

Американские специалисты с

Полезный обмен мнениями

Заканчивается поездка американских специалистов-растениеводов по Советскому Союзу. Ленинград был последним пунктом в их поездке по стране.

— Мы рады познакомиться с вашей деятельностью, — сказал глава делегации доктор Герман Роденхайзер при встрече с учеными Всесоюзного института растениеводства. — Мы давно желали этого.

Заместитель директора института растениеводства член-корреспондент Всесоюзной академии сельскохозяйственных наук имени В. И. Ленина профессор И. А. Сизов подробно знакомит гостей со структурой института, его большой научной работой. Свыше 200 тысяч видов и форм растений имеют в своем распоряжении исследователи, причем более 150 тысяч сохраняются в живом виде. Только в прошлом году институт обменялся семенами с 43 странами мира. В его коллекции, которая представлена более чем 80 странами, имеются образцы почти всех возделываемых на земном шаре растений, кроме тропических.

Профессор И. А. Сизов сообщает, что институтом издаются многочисленные труды. В частности, уже вышло восемь томов «Культурной флоры СССР», имеются монографии по отдельным культурам.

Магистр наук Карл Эрлансон спрашивает, попадают ли эти труды за пределы страны — в США, например?

— Да, конечно, — говорит профессор. — С Америкой, как и с другими странами, мы обмениваемся литературой.

Позднее, осматривая библиотеку, члены делегации Джон Магнесс, Герберт Крамер и другие имели возможность увидеть свои последние научные работы, изданные в США.

Руководитель делегации доктор Герман Роденхайзер сообщает, что у них в министерстве земледелия имеется отдел, который по своему назначению и направлению работы во многом напоминает Всесоюзный институт растениеводства. Руководит этим отделом член делегации, магистр наук Карл Эрлансон. Последний рассказал о работе руководимого им отдела:

— Он много раз реорганизовывался. Но с недавних пор мы построили его работу по типу вашего института. К сожалению, отмечает американский уче-

ный, мы не сумели наладить широкого обмена семенами с вами, что было бы очень желательно. Вероятно, этому до сих пор мешала наша частая реорганизация.

— Вполне возможно, — говорит профессор Сизов. — Во всяком случае с нашей стороны препятствий не существует. В минувшем году мы получили из США семена 28 сортов, а отправили 134 сорта.

Советские и американские ученые пришли к мнению, что обмен семенами и посадочным материалом между СССР и США нужно расширить. Это в интересах науки обеих стран. Также должен быть улучшен обмен научными трудами.

У доктора Джона Вольфа, как он замечает, сложилось впечатление, что в СССР нет централизованного научного органа, который занимался бы вопросами переработки и применения сельскохозяйственных продуктов.

— В Америке, — говорит он, — есть специальная служба переработки и применения, располагающая четырьмя лабораториями в разных зонах страны и штатом ученых более чем в 1.200 человек. Вопросам использования сельскохозяйственной продукции в США придается большое значение.

Американские ученые ознакомились с лабораториями Всесоюзного института растениеводства, с его библиотекой.

Несколько часов провела делегация во Всесоюзном научно-исследовательском институте защиты растений. Здесь американские и советские ученые обменялись мнениями по ряду вопросов борьбы с болезнями и вредителями сельскохозяйственных культур.

Значительную часть времени в Ленинграде американские растениеводы посвятили ознакомлению с городом, его памятными историческими местами, побывали в Эрмитаже и Петродворце.

14 августа члены делегации выехали в Москву, откуда возвратятся на родину.

Руководитель делегации доктор Герман Роденхайзер сказал вашему корреспонденту, что цель, которую они ставили перед собой, предпринимая поездку в СССР, вполне достигнута, что эта поездка была для них чрезвычайно полезна и поучительна.

П. ПОЛЫНСКИЙ.

(Спец. корр. «Сельского хозяйства»)
Ленинград.

подачей 24 вагонов.

Необходимо устранить препятствия на пути реализации урожая овощей и картофеля. Это — обязанность руководителей облпотребсоюза, контор Ленгорплодоовощ и управления Ленинградской железной дороги.

М. ЕСЕЛЕВ.

(Корр. «Сельского хозяйства»).

Ленинград.

СТОИМОСТИ ПРОДУКЦИИ ОННОГО СОВЕТА

мость центнера молока снижена на 3 рублей, мяса — на 103 рубля, свинины — почти на 500 рублей.

Но в колхозе еще высока себестоимость овощей. На огородах работы в основном ведутся вручную, поливы делаются коротким бороздам. На фермах зачастую

заматов и главный агроном Г. Камерцель рассказали им о достижениях этого хозяйства, где орошается 6.500 гектаров, из них 4.300 — под хлопчатник.

Доктор Торн захотел выяснить технику полива, расстояния между временными распределителями воды и длину борозд.

Директор совхоза тов. Авзаматов рассказал о технике полива малой струей по глубокой борозде.

— Разумная система, — отозвался доктор Вильям Эллоуэй, — но она требует много труда. У нас в США в последние годы стали практиковать сифонную систему, используя для этого полиэтиленовые трубы. Тогда не надо следить за расходом воды.

Американцы ознакомились с бытом рабочих совхоза. Они осмотрели больницу, среднюю школу, строящийся клуб, побывали в доме совхозного шофера С. Кадырова.

Во время посещения колхоза имени Свердлова Мархаматского района гости заметили, что в кишлаке строятся много домов.

— В прошлом году мы построили для членов артели 40 домов, — сообщил им председатель артели тов. Таджикибаев, — а нынче воздвигаем 100. Для строительства у нас имеется достаточно средств.

— А как колхозники рассчитываются за эти дома? — поинтересовался Джо-зеф Булик.

— Дом стоимостью в 12 тысяч рублей или в 28 тысяч рублей колхозник полу-

№ 177 (8125)

Вторник, 29 июля 1958 года

Цена 20 коп.

Американская делегация специалистов в области почвенных и водных ресурсов, прибывшая в Минск, была принята министром сельского хозяйства Белорусской ССР М. Н. Луценко. Во время беседы он дал краткую характеристику особенностей развития сельского хозяйства республики. Гости задали много вопросов. Руководитель делегации д-р Чарльз Келлог спросил, выращивают ли в республике сахарную свеклу на торфяных почвах; инженер Вильям Доннан попросил рассказать о том, как ведет себя в Белоруссии кукуруза, и т. п.

Затем делегаты посетили Белорусский научно-исследовательский институт мелиорации и водного хозяйства. Здесь с ними беседовали президент Белорусской академии сельскохозяйственных наук И. С. Лупинович, директор института С. Г. Скоропанов и группа ведущих научных сотрудников. Они подробно рассказали о своих работах по комплексному изучению болотных и заболоченных земель.

В лаборатории почвоведения, где объяснения давал президент академии, доктор Келлог во время беседы сказал, что американские специалисты в настоящее время работают над составлением почвенных карт отдельных фермерских хозяйств. Поэтому он с особым вниманием рассмотрел показанные ему для примера карты почв колхозов имени Жданова и «Победа» Телеханского района Брестской области. Гости и хозяева договорились о взаимном обмене такого рода картами.

Инженер Вильям Доннан, специалист по дренажу, попросил у руководителя лаборатории гидротехнической мелиорации профессора А. И. Левицкого особой встречи. Его заинтересовали расчеты расстояний между дренами, формула которых разработана в институте. Побывав в гидротехнической лаборатории, инженер Доннан произнес по-русски:

— Хо-ро-шо!

семь лет средний урожай ячменя у нас составил 43 центнера с гектара.

Там, где раньше было болото, теперь высокие урожаи дают и другие культуры. Вильям Эллоуэй в связи с этим заметил, что белорусский овес высоко ценят в США. Марлин Клайн вспомнил, что еще его отец в штате Миннесота охотно культивировал именно белорусский овес.

Прощаясь с гостеприимными хозяевами, руководитель американской делегации Чарльз Келлог оставил следующую запись в книге отзывов экспериментального хозяйства: «Эти строки пишутся в конце очень приятного дня, во время которого мы, приехавшие из Соединенных Штатов, узнали очень много от наших хозяев, которые, несомненно, являются высококвалифицированными учеными и в то же время приятными собеседниками. Научные работы, проводимые здесь, обещают принести огромную пользу колхозникам этой республики, а также фермерам других стран, где имеются аналогичные почвы. Люди, живущие здесь, должны быть счастливы, что имеют такие богатые торфяные почвы и знают, как использовать заложенные в них возможности на благо развития сельского хозяйства».

На другой день американские специалисты побывали на полях Смолевичской машинно-мелиоративной станции. Главный инженер В. И. Жуков показал им болотный массив «Волма», раскинувшийся на 25 тысячах гектаров, из которых за два года освоено 7 тысяч гектаров.

Остановившись возле траншейной машины для укладки дрен, инженер Доннан заметил, что в США применяют примерно такие же машины, но с башмаком.

Делегаты наблюдали в работе новые машины, сконструированные в Институте медиации и водного хозяйства.

Великие государства 120 тысяч кв. м.
Прежарительные посылы показыва-
ют, что способность центра молока за-
вершить молоко составляет не более 80
и рываодителям мордовских районов
организаций. Знают ли они о том, ка-
кую роль играют кооператоры в развитии
сельского хозяйства и получают в этом
наше государство и получают в этом
наше государство и получают в этом

№ 195 (8143)

Вторник, 19 августа 1958 года

Цена 20 коп.

Покинув солнечный Узбекистан, делегация американских почвоведов и ирригаторов направилась в соседнюю Казахскую республику. Позади уже 7—8 тысяч километров пути, во время которого представители сельскохозяйственной науки и техники США познакомились с опытом многих колхозов, совхозов, опытных станций, научных учреждений. Они видели ирригационные сооружения на болотах Белоруссии, на рисовых полях Кубани, в пустынях Средней Азии, изучали разные почвы и убедились, что могут дать подзолы, черноземы, сероземы в хозяйских руках. А теперь воочию увидели беспрецедентное в истории земледелия явление — освоение в кратчайший срок десятков миллионов гектаров веками лежавших втуне земель.

Что представляла собой Казахская степь до того, как ее коснулась рука советского человека? По дороге из Акмолинска гости попросили остановить автомобиль возле участка нетронутой ковыльной степи. Выяснилось, что это поле принадлежит колхозу имени Сталина Акмолинского района, который оставил его под пастбище. Доктор Чарльз Келлогг сейчас же извлек из полевого саквояжа молоточек — неизменный спутник ученого-почвоведа — и взял образец почвы.

— Плодородная земля, — определил он, — но может ли она дать большой урожай в условиях частой засухи?

На этот вопрос лучше всяких слов ответили американскому специалисту поля колхоза «XVIII лет Казахстана» Шортандинского района, на которых делегация оказалась спустя час. Окрест, насколько хватал глаз, простиралось желтое море поспевающей пшеницы...

Председатель колхоза Кан Де Хан, приняв гостей на полевом стане первой бригады, дал справку:

— В 1956 году наш колхоз собрал с каждого гектара по 12,6 центнера пшеницы, в 1957 году — по 13,5, а нынче мы возьмем 18—20 центнеров. А пшеницы у нас 8.560 гектаров.

— Сколько же в колхозе всего зем-

для Казахского научно-исследовательского института зернового хозяйства, задача которого, как объяснил гостям директор института член-корреспондент ВАСХНИЛ А. И. Бараев, исследовать прогрессивные приемы освоения целинных и залежных земель.

— О значении этой работы для Казахстана можно судить хотя бы по тому, что одна только наша республика сеет сейчас пшеницы намного больше, чем вся Канада, — объяснил тов. Бараев.

Выражением интереса, который проявили гости к работе института, могут служить количество и характер заданных ими вопросов. Д-р Эллоуэй, например, попросил рассказать о приемах освоения солонцовых почв, д-р Нельсон — о применении бактериальных удобрений на целинных землях, д-р Келлог — о рекомендациях института по посадке лесных полос, д-р Торн — о способах сохранения влаги в почве.

Из ответов работников института американские специалисты составили себе ясное представление о работах всех отделов этого научного учреждения — агропочвоведения, селекции и семеноводства, механизации, плодоводства и др.

Гости побывали в опытном хозяйстве, земли которого занимают 13 тысяч гектаров. Высокой стеной, густая, чистая стояла вытянутая в струнку пшеница сорта «акмолинка-5». Специалисты из-за океана согласились с хозяевами, что этот массив даст с каждого гектара по 30 центнеров.

— А она у вас не полегает? — поинтересовался д-р Торн.

— Нет, — ответил тов. Бараев, — у нас такой опасности нет. — И, отвечая на другой вопрос д-ра Торна, добавил: — Эта пшеница идет по целинному парку. В наших условиях целину надо запахивать как можно раньше.

У массива посевной пшеницы завязывается оживленная беседа об особенностях севооборотов на целине и о подробностях обработки почвы.

Автор сорта «акмолинка-5» В. П. Кузьмин, действительный член Казах-

сти скошил все за
цать дней, собра.
Колхоз имени Лени
на получил в сред
неров озимой пше
— по 26 центнеро
культуры намолачи
комбайнер артели
Анненского района
«Сорок лет Октя
района озимая пше
дала по 30,4 цент
ров — по 25 цент
хозе «Цимлянский»
ли по 28 центнеро
120 гектаров — п
хозе «Придонский»
ров озимой пшениц
больших площадях

Бр
высоких



ОДИН из луч
колхоза «
Анненского рай

тошен раздѣльнимъ

Выводы уроков. В
собрата собрата в
пшеницы по 120
а, более 100 пудов
ты, по 150 пудов

Mr. Joseph S. Bulik

U.S. Department of Agriculture
Foreign Agricultural Service
Washington 25, D.C.

Dear Mr. Bulik :

I am very much obliged to you for receiving the report of the group of experts that visited reclaimed regions of the U.S.S.R. last summer.

As you know my speciality is land reclamation, that is why I cannot make bold to speak on the questions of agricultural practice and soil science touched in the report.

As to the reclamation part of the report, I am grateful to you for the favourable review about irrigation and drainage developments in the U.S.S.R. as a whole though we do realize that we are much to do in the field of reclamations and, therefore, our reclamation projects are being permanently improved.

Some critical remarks of the report concerning, for instance, the problem of drainage of irrigated lands will be taken into consideration. I must point out however that in the U.S.S.R. where theoretical drainage principles have been applied fully on a large scale for the recent years practical drainage construction is still in progress with necessary care and time. The drainage has been very much improved in the last years.

Concerning the question of irrigation, I am glad to hear that you may consider that the present situation is not ideal and is being improved.

When I will be back in the U.S.S.R. I will be a member of the report in connection of which you personally took an active part.

With great respect

Summary of Remarks on Impressions of the United States Mission on Soil and Water Use in the Soviet Union, during the summer of 1958, before the National Agricultural Advisory Commission, September 30, 1958

Introduction

(1) Except for visits near Minsk, Belorussia, primarily to see the research on drainage and the field methods for the reclamation of organic soils, the field studies of the team were made in relatively treeless areas: in the Ukraine; in Russia near Stalingrad, Rostov, and Krasnodar; in Uzbekistan; and in the northern part of Kazakhstan.

(2) The people everywhere were very friendly to us, partly I believe because we were Americans. The farm people are hard working and intelligent. Attendance in the 7-year schools is everywhere compulsory. But not everywhere do the people necessarily learn Russian. (There are 82 languages in the Soviet Union and Russian is not required in all the 7-year schools.)

(3) The farms are very large. As a result of many recent consolidations of collective farms, there are now somewhat less than 90,000 state and collective farms in the whole country. Except for the small private plots of families on these farms, there are essentially no family-operated farms. I have been told there are a very few in small remote areas surrounded by non-arable land.

(4) Except for some estates and a few communities, modern farming was not undertaken on a wide scale until after the 1920's. (Perhaps the most exceptions were in the Ukraine). Because of the confusions resulting from World War I and the Revolution it was not until the late twenties and early thirties that plans really began to be carried out.

Then World War II wrought terrible devastation to cities and farms alike in the large western area occupied by the German Army.

Present Status

(1) In the Soviet Union there are large areas of good soil, including much yet to be developed: (a) by ordinary breaking and plowing, especially in parts of Siberia and the northern part of Kazakhstan; (b) by irrigation, or by combined irrigation, drainage, and salinity control, in the southern parts of the country, including the lower valleys of the Volga, the Dnepr, the Don, the Kuban, the Syr-Dayra, and many other streams; and (c) by drainage, especially in Belorussia. (Some development of good soil had been delayed because of lack of transport.)

Many of the good soils were developed naturally under grass, or a combination of grass and forest, on undulating deposits of loess. Much of the agricultural land has a moderate to high climatic risk: Some years are too cool and wet from an extension of the Baltic climate, and some summers are dry from an extension of the Mediterranean climate from the southeast or of the desertic climate from Middle Asia.

(2) Most farms have made big strides toward mechanization and electrification, especially very recently with the transfer of much heavy equipment and responsibility from the machine and tractor stations to the farms. Some collectives are poor and are not electrified and are short on machinery. The big machines, especially crawler

tractors and heavy combine harvesters, are symbols of modern progress to many Soviets. We saw some excellent machines including those required for accurate placement of fertilizers at seeding time for corn and cotton and for applying supplemental fertilizers later. We saw excellent machines for making ditches and other works of improvement. Certainly part of these were testing models and not widely produced. Many farms have milking machines and carriers on tracks for silage and others to remove the manure from the barn.

Yet other aspects of farming operations are far from modern. On most farms, for example, the manure is pitched by hand into small wagons and hauled to the field by horses as has been the custom in Europe since the Middle Ages. Many of the dairy cattle are fed green-cut fodder, and much of this is cut by hand and hauled to the barn in small animal-drawn carts. At the same time, we saw modern silage harvesters that fed into the trucks that hauled the silage to storage. In places, much hand work with short-handled hoes is done to control weeds in vegetables, cotton and other row crops.

(3) Besides the crop-breeding work reported by the Crops Mission, we were impressed by some of the efforts toward developing early-maturing varieties of cotton and rice to make high production of these crops possible during short warm seasons; together with the related soil practices for rapid growth.

(4) The manufacture and the use of fertilizers are expanding. New plants are under construction and others are in plans. There is emphasis on phosphorus and nitrogen, in many places on potassium, and

in some places on certain of the minor nutrients. Deficiency symptoms were noticeable, although not extreme considering that this was a wet summer. Skill in the use and application of fertilizers is increasing but Soviet farm managers have a considerable way to go in this skill to equal, let us say, the Dutch, Belgian, British, and American farmers.

(5) Deficiency of transport is a serious limiting factor to agriculture in the Soviet Union. The country is very large and the rivers are nothing like so helpful as those in western Europe and in central United States. Thus transport is difficult for getting such supplies to the farms as lime, lumber, fertilizers, and machinery. And, of course, it is difficult to transport the farm products promptly to the places where they are required. For some reason the Soviet Government has not placed a high priority on highway construction. The roads to most farms are ungraded and are either very muddy and rough or very dusty and rough. This means that most trucking is done by relatively small trucks of 2 to 5 tons. Because of these serious limitations of transport, it is difficult to get building materials for houses in many places. It has resulted in the inefficient production of some crops, such as fruits and vegetables, in places not well suited to them.

(6) The amount of labor on many farms seemed excessive to us. Some chairmen of collective farms agreed they could operate with considerably less labor. But of course this situation cannot change until there are more factory jobs and other economic opportunities for people now on collective farms.

(7) The weed problem is generally serious on most farms that we saw. Perhaps this problem got a good deal worse during the confusion of World War II. As a result costs are high for extra tillage and hand labor; and the good structure of some soils is injured by this excess tillage. For high efficiency a large increase in chemical herbicides is needed, especially on the grain crops, including rice. Most Soviet agriculturists are aware of this need.

(8) Farm planning based on soil maps is generally good. By our standards these maps lack some in both cartographic and classificational detail. It was explained to us in Rostov that following the soil mapping, and any additional soil testing, plans were made for the farms cooperatively between the experts on the farms and those in the government. Disagreements and difficult situations were said to be ironed out in conference; and when the plans were finally agreed upon the chairmen of collective farms and managers of state farms were expected to adhere to them. Because of the widespread knowledge of soil classification among the agriculturists, including the agronomists on farms, and because of the controls inherent in the Soviet system, we saw relatively few instances of soils unsuited to agriculture being used for agriculture. We were impressed in the "new land" area, for example, with the care with which soils subject to serious hazards of drought, erosion, or blowing were avoided for field crops and the care with which they were maintained in vegetation. We saw very little overgrazing of grassland subject to erosion or blowing. Some of the other details of farm planning were carried on with less precision and

accuracy than in the United States. Then too, we noted some significant differences between the plans and the actual cropping patterns on the ground.

(9) The collective farms vary widely in income. Those that were examined were, of course, somewhat better than average. Including both payments in cash and payments in kind, a standard work-day unit ranges from around 7 or 8 rubles to 25 or 26 rubles.^{1/} We have no doubt that some are lower. The problem of these low-income collective farms has led to the concentration of management skills by the consolidation of collective farms. Besides, the Communist Party watches the farms and arranges that poor farms select competent chairmen in order to improve the farms. It seems likely that some party members take these jobs at a personal sacrifice for the public good.

(10) Living standards vary considerably among farms, depending upon their income. Generally they are lower than the living standards on commercial farms in the United States, but they are very much better than those common in the villages of southern Asia. Many of these farms had difficulty in building houses for their people immediately after World War II. On the more productive farms these old houses are gradually being replaced with considerably better ones. A typical new one-family house has a living space of about 60 square meters. It has a metal roof, good windows, and warm walls. A few even have small refrigerators and other conveniences.

^{1/} Very roughly, 10 rubles correspond to 1 dollar.

(11) Generally, soil erosion is less serious in the Soviet Union than in the United States, partly because a higher percentage of the land used for crops is level to undulating, partly because of the pervious nature of the majority of soils, and partly because a smaller part of the rain comes in showers of high intensity. In many places, however, the perennial streams have entrenched themselves deeply into the loessial plains. Natural ravines lead back from the rivers into these plains and along their sides one sees considerable gullying. This was especially noticeable along the lower Volga and Don rivers. Other examples could be seen along streams in the Ural Mountains and elsewhere. The Soviets do well with vegetative practices for erosion control, such as tree planting and guarded grass, but they make rather poor use of terraces, diversion terraces with chutes, and other farm structures for gully control. They know how to make such kinds of structures; we saw them along railways and near some cities. Except for large dams, canals, and similar works, civil engineering is far less applied on farms than is mechanical engineering.

(12) We saw a good many shelterbelts and windbreaks, partly to protect crops from hot summer winds and partly to guard against soil blowing. Perhaps some serious hazards of soil blowing exist in the Volga region east of Stalingrad and elsewhere that we did not visit. We do not know. But on the whole that problem was not so apparent as we had anticipated from other reports. Of course, this was a wet year, but still the soils did not show much evidence of recent damage from this source.

Agricultural Potential

(1) The people of the Soviet Union have plenty of room for both vertical expansion on their present farms and for aerial expansion onto good soils. No doubt a great deal more cropland will be made available through drainage and irrigation and a good deal of present cropland will be improved by these practices. Planting of shelterbelts will help some to protect crops against hot winds. But agricultural planning will need to take account of the climatic risks. Of great general importance will be better transport, more rapid transport, better storage facilities, and better processing facilities for perishable crops.

(2) Much of their soil and water research is good and interesting. On the whole we did not find it quite so good as we had expected.

Currently, as in the United States, many of the most brilliant and promising students are going into the physical sciences rather than into the agricultural sciences. We saw many research institutes with good staffs and facilities. The weight of authority and of seniority perhaps holds back some of the new ideas of the younger men and women scientists more than in the United States.

The soil classification seems a bit out of date to us. It is extremely classical. From 1870 until World War I the basic aspects of soil classification were more highly developed in the Soviet Union than elsewhere. The system has been accepted in much the same form as it was finally developed by the famous Professor K. D. Glinka in the early 1920's except for minor changes and qualifications now needed for making detailed maps of farms. Many of the farms have maps at scales

of 1:10,000 to 1:25,000. The plan calls for completion of soil maps on all farms in most republics within 3 to 5 years. On the other hand, soil classification is emphasized very strongly in all the teaching of agriculturists in the universities and in the institutes. Thus nearly all of the agronomists, irrigation engineers, and others working on farms or with farms as experts from the oblasts, the ministries, and the institutes know the soils well - far better than comparable agricultural specialists in the United States.

The drainage work is proceeding with good machines. The designs are probably based a great deal on examples from Holland and elsewhere. The tile we saw is of rather poor quality and apparently tile are not yet widely used. In our view much of the peat land was being somewhat overdrained, as is also true in some of the United States. In the irrigated sections we were strongly impressed with the inadequacy of drainage in areas that may become salty. Some of the reclamation projects will certainly require additional drainage for continued success.

We were quite well impressed with the heavy work for irrigation including the main canals and the canals leading to the farms. But the handling of the water on the farms was not so good as on good farms in the western part of the United States. Our irrigators on farms in the United States waste water; but it seemed to us that Soviet irrigators were wasting more.

Although we saw many useful field experiments, we failed to see a first-class set of experimental plots laid out in the modern design.

The experiments on rice fertilization were conducted on fields of about 15

acres. Experiments with grain crops were often carried out by comparing fields of 100 to 500 acres. Of course such experiments have high errors. As a result, the Soviet experts themselves have uncertainties about many practices that we believe could be clarified with systematic replicated and randomized field experiments.

(3) Farm people appear to study available pamphlets and books about agriculture. A great many take correspondence courses with the agricultural institutes in order to receive their diplomas as agronomists, animal husbandry experts, and the like.

(4) Barring some catastrophe, Soviet farms will increase production substantially, especially in animal production, vegetables, fruits, sugarbeets, and other industrial crops. No doubt they could produce considerable grain for export. These increases will depend upon increased supplies of fertilizers, machinery and the like, better and more rapid transport, and more adequate processing of agricultural products, including refrigeration.

What we learned applicable to the United States

(1) We were impressed by the increasing emphasis on education and scholarship. Generally, students are chosen for the universities and teaching institutes on the basis of competitive examinations. After admittance students receive stipends so long as their grades are satisfactory. Those getting the highest grades get additional stipends.

(2) We were impressed by the great agricultural exhibits in Moscow and the one in Kiev. At Moscow there is a large area with many permanent buildings to exhibit all phases of Soviet agriculture throughout the country. Movies and other exhibits set forth explanations of the best

practices. Workers on farms who have done well get the opportunity to go with their families to this great exhibit. Certainly it has great educational value, to rural youth especially.

(3) Generally, the Soviets have excellent services for abstracting and translating foreign literature. A high percentage of the agricultural scientists who become members of the Academy of the Sciences of the USSR read English and many of them speak it. Without doubt they are considerably more familiar with our scientific literature than our people are with theirs.

(4) At the present time about as many women as men are trained at the institutes in agronomy and animal husbandry. Some of these women do very well as farm agronomists and are promoted to higher positions in the government. Also many women are being trained at the universities in the sciences basic to agriculture. In fact, the soil scientist now in charge of the most important section of the Dokuchaiev Institute - the section on Soil Classification and Mapping - is a highly accomplished woman who speaks excellent English. (This Institute is a constituent part of the Academy of Sciences of the USSR and is the highest authority on soil science in the country.) Should the Soviet Union become involved in a serious war they will have many well-trained women agriculturists.

(5) We were impressed with the obvious advantage of widespread training in soil classification for all agriculturists who are involved significantly in helping farmers plan the most efficient use of their soils on a sustained basis.

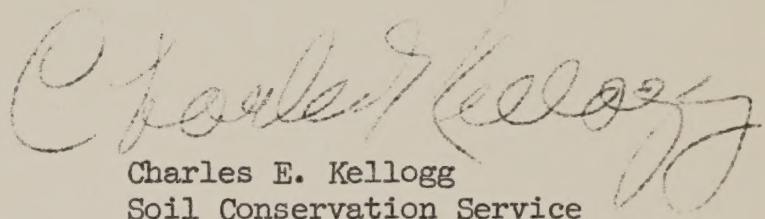
(6) In some ways recent experience with shelterbelts in the Soviet Union is similar to ours. Originally the idea in both countries was to have wide plantings in which natural regeneration could be expected. In

both countries the tendency is now towards much narrower belts or windbreaks. In our country we are concerned with both summer winds and winter winds, whereas the Soviets are primarily concerned with hot summer winds. Their recent experience suggests that the shrub rows should be eliminated in field windbreaks and the very lowest limbs pruned so that there is about a 24-inch space for the passage of air at the ground level. In the Krasnodar Krai, for example, with windbreaks of 2 to 4 rows they suggest a spacing in the grain fields of 25 times the height of the trees. With windbreaks tight at the ground level this spacing is reduced to 15 times the height of the trees. Actually, we saw only a few areas with windbreaks so closely spaced. One suspects that farm managers and chairmen are somewhat less certain of the value of windbreaks than are the agricultural advisers. Nearly all farms have them in the plan but many farms do not have them all on the ground. This may be partly a matter of "first things first." Many of the windbreaks in the western part of the country were destroyed during the War and are only partly replaced. Since all farm animals are herded in the Soviet Union, we saw little damage caused by grazing animals, whereas that is one of the major hazards to American shelterbelts.

(6) Some of the water-measuring devices used in the canals may have application in the United States and also some of the turbine pumps.

(7) In large parts of the Soviet Union where rainfall is relatively low and snow is relatively abundant, special tractor-drawn

machines windrow and pack the snow in the fields. On many farms this is done 2 or 3 times. A few take their machines over the fields the third time crosswise to the first windrows.

A handwritten signature in cursive script, reading "Charles E. Kellogg". The signature is written in dark ink and is positioned above the typed name and title.

Charles E. Kellogg
Soil Conservation Service

